Gulf Coast Development Issue

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The OIL WEEKLY

OIL and GAS ENGINEERING

FOR OIL AND GAS PRODUCTION AND PIPE LINE DIVISIONS

THE WEEK'S NEWS INTERPRETED

MARCH 20, 1933
me 69 Number 1

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The folks in the picture, front row, left to right:

James G. Donaldson, a visitor
R. J. Cady, Driller
Joe Butler, Jr., tooldresser
E. G. Butler, of J. W. Butler & Sons
J. W. (Joe) Butler, Sr.
R. F. Butler
W. L. Kelsey, Jarecki store manager at Wooster, Ohio

Back row, left to right:

REX, the Butler Dog
F. A. Donaldson, Union Wire Rope Corp.

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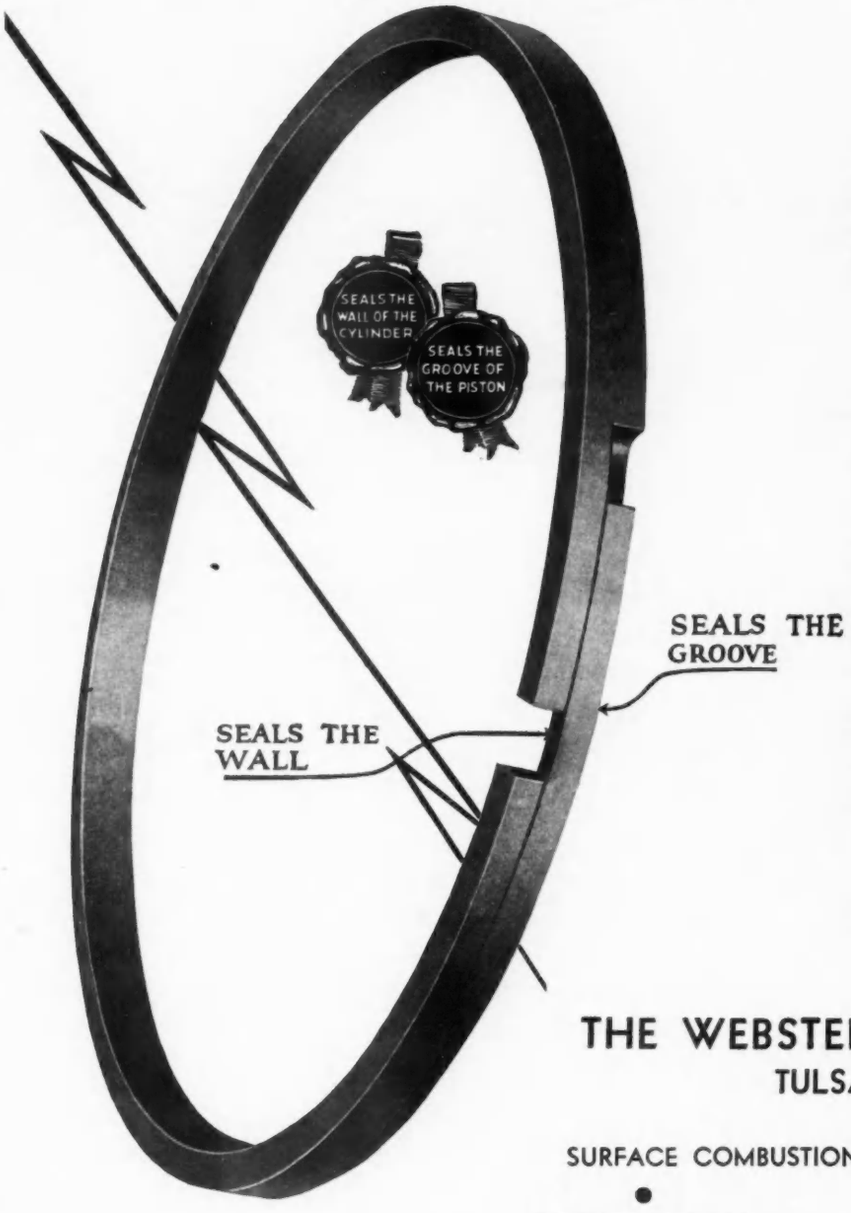

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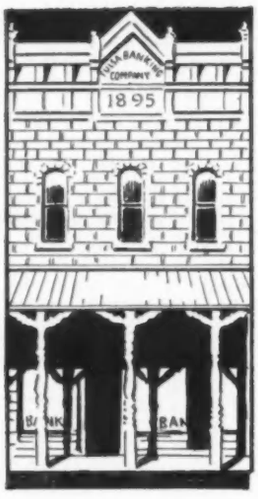

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THE OIL WEEKLY

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S. W. ROBINSON
Editor

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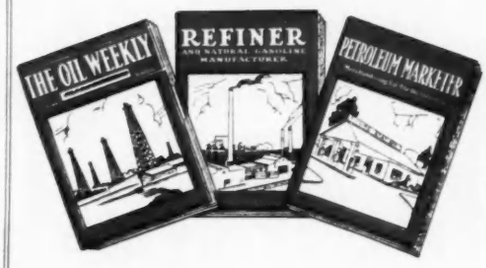

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CONROE, TEXAS

VOLUME 69, No. 1 MARCH 20, 1933

THE OIL WEEKLY

FOR OIL AND GAS PRODUCTION AND
PIPE LINE DIVISIONS

ENGINEERING ▪ NEWS ▪ STATISTICS

A Lot of "Ifs"

RAY L. DUDLEY

THE oil situation in Texas as the week closed was at a crisis. Over-production in East Texas had boosted the daily output there to around 530,000 to 540,000 barrels, far more than 100,000 barrels per day above the railroad commission's allowable.

The three-judge federal court had dealt another blow to proration through a decision adverse to the railroad commission on its East Texas order issued early in January, although an encouraging note was the failure of the court to "slap down" the market demand law on which the commission's order was based. The commission is now one up on the federal court in its game of decisions vs. orders inasmuch as the court hasn't had an opportunity to make a decision yet on the new order of the commission issued last week.

Operator after operator in the East Texas field told THE OIL WEEKLY during the week that they were becoming wearied of producing in accordance with the commission's orders and seeing their properties drained by injunction seekers or plain order violators. Heads of large oil companies operating in East Texas said the same thing to assembled Texas legislators and oil people in Austin Thursday evening.

Bills were in the hopper at Austin to put more teeth into the enforcement of railroad commission orders, and finally the hope was expressed in Austin Friday by many close to the commission that it was at last ready to write an order that had a chance of standing up in federal court.

Attacks on the commission itself were becoming more emphatic and were brought to a head by a speech made before the legislators Thursday night by an attorney who was thought—probably erroneously—to have been inspired by the commission or one or more commissioners. In fairness to the commission it should be recorded that various members of the commission denied sponsorship for the speech which threatened to set off fireworks.

Friday saw the Attorney General, the Governor and the Texas Railroad Commission visited by the A.P.I. committee of high executives of large companies. The same committee had appeared before the House of Representatives on Thursday evening and several of them made talks on the oil situation. In these talks the legislators were told of the seriousness of the situation, and Axtel Byles and Harry Sinclair, in discussing the situation said that it was a question of time as to how long they would continue to stand drainage in East Texas unless something is done to enforce the law.

Commissioner Thompson, who has taken the difficult task of handling the East Texas situation in person from a seat of action at Kilgore was the author of several statements during the week dealing with the difficulties of enforcing the law and asking for more teeth in the enforcement law.

The Attorney General's department was reporting action on some contempt cases but the elusiveness of certain defendants made results difficult.

Early in the week an old fashioned revival meeting was held among the big operators—and little ones too—in Fort Worth at which many confessed their sins and promised to sin no more.

The seriousness of the situation was apparent to everybody. Unless something is done to still the troubled waters—to put a stop to drainage in East Texas by injunction seekers or law violators—the end of proration certainly is in sight.

The encouraging note of the whole thing was that most of the interested parties seemed to appreciate that something was about to happen. Even some who have opposed proration seemed to begin to realize that with the lid about to blow in East Texas they were face to face with that chaos about which the others have been talking so long.

Those who heard the major company executives Thursday night at Austin interpreted their talks as meaning that the majors are willing to go to still further lengths to save the situation—that if production in Texas can actually be held to 750,000 barrels a day—possibly as high as 800,000 barrels, there will be compensation for the effort in dollar oil. If the promise wasn't made, it was at least accepted as such.

The visit of the executives with the Attorney General was thought to be for the purpose of asking him if they could make such a proposition and not violate Texas anti-trust laws. The executives and the attorney general both said that the subject was not raised.

What will happen is on the lap of the gods. One got the feeling Friday afternoon in Austin that a solution might be near—but all that could be found to substantiate the feeling was the apparent desire on the part of so many who wished dearly for it.

If the commission will re-write its latest order and include well, acreage and potential—and if the price is enough to satisfy the operators, and if teeth are put into the enforcement laws—and if the federal courts will uphold the new proposed order—then the crisis will be averted. A lot of ifs.

Leaders Make Plea for Proration

Institute Committee Takes Industry's Problems Before Texas Legislature

Austin, Texas, March 17.—Leaders of the petroleum industry appeared before the Texas legislature last night and made a concerted plea for enforcement of conservation regulations. References of C. B. Ames, president of the American Petroleum Institute to dollar oil were accepted as a willingness of oil purchasing companies to pay that price, provided output can be brought into balance with needs.

Appearance of these executives before the legislature was a departure in practice. It followed passage of a resolution by the Texas House of Representatives asking for a dollar price for oil.

J. Edgar Pew, vice president of the Sun Oil Company, Philadelphia, spoke first and said that the market demand conservatiaon law had failed to accomplish results expected but that the fault was not with the law but the result of the attitude of producers in some instances.

C. B. Ames, president of the American Petroleum Institute was then introduced to present the case of the purchasing companies which were represented.

He stated that this is the first time such a committee has ever visited Texas legislature or any other legislature. They came at the invitation of all branches of the industry and all oil associations in Texas.

He requested the legislature to forget the past charges made against the major concerns as monopolies, and joining with them in saving the industry for the people of Texas.

He declared that Texas is the solution of the industry as it produced 40 per cent of the oil in the United States, and consummed only six per cent of the production.

He stated that the group was here in response to the legislative resolution calling for a price increase.

He pointed to the daily waste of 600,000,000 cubic feet of gas in Texas as one of the problems that must be solved. He said that the total consumption of the entire United States is only 1,000,000,000 cubic feet, and therefore Texas is wasting half as much as the rest of the country consumes.

This is not only gas waste, he said, but it is bringing to the surface excess production which is wasted, and lowers the ultimate recovery from the fields.

He declared that there is a lack of harmony between the law and the economics of the industry. The law of capture is being modified both by statute and industrial practice.

He believes that there can not be too much state control of a natural resource, and the law must be invoked to prevent the improper use of oil and gas.

Storage Excessive

He pointed out that during 1928, 1929, 1930, there was built up a large surface storage all over the country amounting to over 680,000,000 barrels.

He stated that the depression caused large losses on this storage and forced a decline in purchasing. The result was no market for new production, which led to price-cutting.

Following this, there was a vast increase in the potential, which is greater today than ever. East Texas alone can supply the entire United States.

The skill of the industry increased faster than the legal machinery to control production, and the science which should have led to greater wealth has brought about disaster.

"Now," he said, "we need legal assurance that scientific progress will not destroy the industry."

He pointed out that other fields in the country could have paid East Texas all the money paid for oil from that field and still made a profit if it had been kept closed in.

Science is now destroying the natural resources and ruining the state when the reverse should be the result.

There exists a large surplus of refining capacity, yet new ones are constantly being built. They have no market, and must develop one by cutting prices.

All of these factors, he explained, are beyond the control of the State, but it can go back and prevent the production of oil greater than the amount necessary to supply the current gasoline market.

The industry, for the first time in its history is facing a decline in the consumption of gasoline, and current reports indicate that this will continue throughout 1933. The depression and the high gasoline tax have caused this decline.

As a remedy, Ames declared, that the states must control production to the market demand, based on the consumption of gasoline alone. It is preferable, in his opinion, to have under—rather than over-production. This is the only protection that can be offered to the small producer. Storage must be slowly reduced, so that this threat is not hanging over the industry.

There are 300,000 small stripper wells over the country that must be preserved. New fields must be restricted to the very limit.

This action should result in a price of $1.00 per barrel for oil. The difficulty is to find a legal method of achieving this result.

Price Promise Illegal

One thing the majors might do is come to the producers of Texas and agree to pay $1 for oil if the production is cut to 750,000 barrels per day. This would result in a total of $300,000 more daily than they are getting for their present production of 900,000 barrels.

However, this would be a violation of the anti-trust laws, even though the agreement was approved by the railroad commission, the Attorney General or the Governor.

This, Ames declared, is the answer to the resolution of the Texas Legislature asking for an increase in the price of oil.

The blame for the present over-pro-

(Continued on page 121)

Austin, March 17.—Representatives of five organizations of oil producers and land owners, repudiated the speech of John Boyle before John Boyle the night previous was repudiated by a resolution. The resolution was to the effect that Boyle was not the spokesman for either of the associations.

Federal Court Rules Against Orders

Three-Judge Court Again Holds That Texas Proration Orders Are Invalid

Fort Worth, Texas, March 17.—The method of proration applied to the East Texas field by the Texas Railroad Commission beginning last January 10 was declared illegal by a three-judge federal court in a decree filed at Tyler March 17. The stand taken by the court in deciding the various points raised by fifty-odd operators and companies taking part in the attack on the commission's rules was generally forecast before the conclusion of the trial case at Houston January 27 to 31. The commission likewise felt that such would be the outcome, so cancelled the proration orders under fire on March 10, and substituted an emergency order giving a per-well allowable of 36 barrels daily per well, pending the application of a combination per well allowable, bottom hole pressure and sand thickness plan scheduled to go into effect March 19, with a top allowable of 400,000 barrels daily for the field.

This latest decision on proration was rendered by Circuit Judge Joseph C. Hutcheson and District Judges James C. Wilson and William I. Grubb.

Although the plaintiffs won a distinct victory over the state, as was the case when a previous proration order of the commission was decided by a three-judge federal court October 24, last, there are no spoils awaiting the victorious group by reason of an entirely new order being in effect at the time of the award by the court.

The right of the commission to draft and enforce proration laws in East Texas was not ruled upon by the court. In view of this fact, legal authorities interpret the new decision as meaning that the plaintiffs are not permitted by the court to throw their wells open. Although scores of operators and companies have been producing their wells almost unrestricted for some weeks and taking their chances on being prosecuted, or subject to damage suits.

Voids Injunctions

Stripped of its legal phraseology, the decision automaticaly voids all injunctions held by the state against violators between January 10 and March 10. This frees the alleged violators during that period from future liabilities for damages or penalties. Only a small number of operators and companies have been enjoined by the commission from over-producing since the emergency order of 36 barrels per well went into effect. Owing to the brief period that this emergency order covers, operators opposed to proration have conserved their energy and funds to wait until the scheduled new method of proration becomes effective before launching another court attack.

It is almost a certainty that any proration order will be subjected to wholesale court attacks because of the bitterness some East Texas well owners have towards regulated production. While these attacks are very expensive to the plaintiffs, they are in a position to collectively finance same through the supreme court.

The suit challenging the use of the per-well allowable plan of distributing production was headed by the Peoples Petroleum Producers, Inc. Rowan-Nichols Oil Company, contested the then existing orders of the commission that restricted one well to 20 acres, while hundreds of exceptions were granted by the commission whereby one and more wells were drilled on tracts of a smaller area. The latter complaintant did not protest against the production allowable assigned the field but sought some consideration for acreage, sand thickness or well potentials as a basis of allocating production. The commission amended its well density rule to call for one well to 10 acres before the conclusion of the Houston trial, thereby partially correcting a rule under fire. Use of the per-well basis of allocating production furnished the principal issue raised by Peoples Petroleum Producers, Inc., and others. Charges were made that the proration order under attack is in the fact and legal effect the same as the questions decided by the federal court decision last October.

Austin, Texas. — A statewide hearing to consider new proration orders for all fields except East Texas and Conroe, has been scheduled by the Railroad Commission for March 27, at Austin.

At this hearing, according to the terms of the notice issued on March 13, the commission will take evidence concerning physical waste, particularly.

They have also requested that all purchasers furnish a report of the amount of oil which they expect to use during the months of May, June, July and August.

Present total allowable for all fields in Texas permits the production of 927,840 barrels per day.

The court held that "practically, the order complained of is more drastic than the one previously enjoined. Production of the field was then limited to 375,000 barrels daily and the plaintiff's wells to around 4 barrels daily, while the new order awaiting the judgment of the court limits the field to 290,000 barrels daily and plaintiffs' wells to between 27 and 31 barrels."

No Ruling on Demand

The court ruled that since the commission's orders are invalid that it was unnecessary to pass judgment as to whether the assigned allowable was legal when based on waste from production in excess of market demand. The decision added that "instead of allocating the allowable to the owners in the field as they did in the Champlin case, 286 U. S. 210, and as our statute requires equitably preserving to each owner substantially that which he owns, this order strips the best properties down to the level of the worst and takes from one owner to give to another. In addition to the manifest unfairness of the order in the light of the evidence that some parts of the field can produce 20 to 40 times that of the other, it was the uncontradicted testimony of Mr. Buck, a witness for the defendants, that the present order did not fairly distribute the allowable and in substance that the proper way to allocate the field was to make a difference between the best part and the worst part of it by basing the allocation of such allowable on the producing abilities of the wells, thus effecting a fair distribution."

The point made by the defendants at the trial whereby aggrieved persons failing to ask for a rehearing on proration orders before going to the court for relief was deemed wholly without merit by the court.

East Texas Problems Baffle Executives *of Oil Industry*

Fort Worth, Texas.—Confronted with an almost certain collapse of proration enforcement for an indefinite period in the East Texas oil field, the ranking executives of nearly all the major purchasers of crude produced east of the Rocky Mountains held a three-day joint conference here early last week with officers of five representative oil organizations in Texas. The visiting executives, whose names have in the past signified power and ability to control upheavals within the industry, functioned as a committee of the American Petroleum Institute that is empowered to seek ways and means of stabilizing production. Their actions indicated that they are somewhat baffled by the unprecedented problem conditions in the East Texas field offer to the industry.

The proration situation in Texas, especially in the East Texas field, was found to be in a more precarious predicament than generally understood, and for this reason the major company officials and representatives of the regional oil bodies readily accepted an invitation to appear before the Texas Legislature at Austin on the night of March 16 to express their views as to what the state must do to avert further deflation of oil prices. Each member of the committee representing the American Petroleum Institute remained over in Texas the fourth day to take advantage of the opportunity to voice their opinion before the legislature as to the fate in store for the state's greatest revenue source unless effective measures are taken in regulating oil withdrawals from the flush fields. J. Edgar Pew, vice president, Sun Oil Company, Philadelphia, headed the Institute's committee, which was selected by C. B. Ames, president.

Widespread disregard of proration restrictions in the East Texas field by individual operators and substantial independent companies has developed a situation that was pronounced alarming by those participating in the conference at Fort Worth. They expressed confidence that the proper state authorities will correct the over-production practices through tightening of proration enforcement, or the passage of necessary laws to accomplish the desired results. It was the unanimous belief of the various groups attending the Fort Worth conference that unless effective measures are taken by state authorities that production in East Texas will continue to increase as well as to decline further in value, and by reason of the volume of illicit oil have a depressing influence over all other fields in the Southwest.

Displaying a willingness to cooperate to the fullest extent in carrying out any legal program for the restoration of a stabilized market, the committee of oil company executives renewed their pledge to refuse to produce, transport or purchase oil of an illicit nature. The company heads committed themselves on such a policy individually and collectively after charges had been made during the meeting by officers of the East Texas Producers and Royalty Owners Association and the East Texas Oil Land Owners Association, both aggressive organizations with membership confined to East Texas, that specific major companies were serving as a "fence" for violators.

Officers of the latter two organizations availed themselves of opportunities made by the Institute's committee to turn the mirror on known instances whereby major companies have been and are guilty of unethical practices and aiding in any way a continuation of over-production by East Texas operators. Specific charges were preferred against one major producer and purchaser for advancing cash to a known chronic violator to be paid back from oil produced in accordance with proration rules, but at considerably less than the posted price. It was further contended that while this particular major company took only the authorized allowable from the producer that the latter likewise marketed elsewhere large quantities of oil from the same properties.

Fort Worth, Texas.—Ideas advanced by the executive officers of five oil organizations, representing various producing districts in Texas, as to policies and inhibitions deemed necessary on the part of major producing and purchasing companies as their contribution toward stabilizing production in the state, were endorsed almost wholly by the major company officials comprising the special committee sent here March 13 for a joint conference by the American Petroleum Institute.

Representatives of the regional oil bodies in Texas met independently on the night of March 13 and drafted their recommendations that imposes restrictions on major companies as well as other important factors in the situation that may be helpful to the Texas Railroad Commission in tightening its proration enforcement in East Texas.

The Texas organizations participating in the joint conference with the major company officials, and the president of each of the former follow:

East Texas Producers and Royalty Owners Association, Bryan W. Payne, Tyler.

East Texas Oil Land Owners Association, Sam W. Ross, Kilgore.

Texas Oil & Gas Conservation Association, Chas. F. Roeser, Fort Worth.

North Texas Oil & Gas Association, J. S. Bridwell, Wichita Falls.

West Central Texas Oil & Gas Association, J. D. Sandefer, Jr., Breckenridge.

Restrictions that have heretofore been ignored to a large extent by some of the major companies represented at the Fort Worth conference automatically become effective as result of their acceptance of the recommendations voiced by the above organizations. Exceptions were taken by the oil company executives in regard to plegding that "the price of crude shall be materially increased" in view of the sub-

(*Continued on page 148*)

A. P. I. COMMITTEE OF EXECUTIVES

THE personnel of the committee selected from the ranks of the major company executives by the American Petroleum Institute to conduct the negotiations with the five oil organizations in Texas follows:

J. Edgar Pew, vice president, Sun Oil Company, Philadelphia, chairman.

E. G. Seubert, president, Standard Oil Company (Indiana) Chicago.

E. R. Brown, president, Magnolia Petroleum Company, Dallas.

R. C. Holems, president, The Texas Company, New York.

Harry F. Sinclair, chairman, Consolidated Oil Corporation, New York.

W. M. Irish, president, Atlantic Refining Company, Philadelphia.

R. A. Van de Woude, president, Shell Petroleum Corporation, St. Louis.

D. J. Moran, president, Continental Oil Company, New York.

A. J. Byles, president, Tidewater Associated Oil Company, New York.

Frank Phillips, president, Phillips Petroleum Company, Bartlesville, Oklahoma.

H. R. Straight, vice president, Empire Gas & Fuel Company.

Bill in Texas Senate *Would Anihilate* Integrated Companies

Austin, Texas.—In a hearing before the Texas Senate on a bill to separate oil pipe line companies from producing or refining companies in Texas, E. H. Lasseter, representing Burton Drilling Company, declared that under the present set-up of integrated companies, the pipe line rates are actually a rebate to the producing companies, rather than a tariff for transporting oil.

He urged passage of the bill by Senator Joe Moore of Greenville, which would require that any company operating a pipe line may engage in no other branch of the oil industry. There is a similar bill in the House.

Lasseter pointed out that the present charge for the tank car haul to seaboard from East Texas is 39 cents per barrel, while the pipe line charge is 30 cents, which includes a 10-cent gathering charge.

Lasseter said that while the producing and refining branches of these large corporations are losing money, the pipeline division makes huge profits, which enable the parent corporation to maintain high dividends.

The witness cited as an instance the Sun Pipe Line Company. He stated that there were 4000 shares of stock valued at $400,000 outstanding. He said the Pew family holds five shares and the remaining 3,995 shares are held by the holding company.

Lasseter said that last year this company paid $1,800,000 in dividends on this stock, or 450 per cent. He declared that this was not a situation peculiar to this company, but that this was the usual method of handling pipe line companies in Texas.

Lasseter stated that the purpose of the new measure is to revert to the condition that existed before the passage of the "Texas Company" bill in 1915. It would deny holding companies the right to hold stock in pipe line companies if they hold stocks in other companies operating in other branches of the industry.

He believes that this well enable all producers to compete in the foreign markets, as it will permit all of them to get their oil to seaboard for the same transportation cost.

J. M. Melson, attorney for the Gulf companies, argued that under the operation of this bill, there will be no more pipe lines constructed in Texas. Pipe line companies will have no production in new fields, and therefore will delay construction until the field is well developed and they are assured of a large supply over a long period of years.

He pointed out the hazards of operating a pipe line company, due to the sudden depletion of many fields and the impracticability of obtaining another source of supply in an area nearby.

He protested that there was no comparison as common carriers between railroads and pipe line companies, as the railroad freight increases with the development of the country, while the heaviest shipments of the pipe lines are carried during the early days of the development of a field when the flush is being run.

Melson declared that pipe line companies in Texas were more closely regulated than in any other state. He pointed out that the railroad commission is empowered to establish rates based on the value of the lines, and that under the terms of the new bill, there is no method set up for the control of rates. Therefore, there will be no change in rates or profits, but merely in the distribution of the profits.

He declared that the operation of this bill would force refining companies to establish large refineries outside Texas and have pipe lines built to them, in order to bring the traffic under the control of interstate commerce.

Small refineries, he argued, would be abandoned due to their inability to purchase oil when the fields near which they were originally built, are depleted.

Jacob F. Wolters, attorney for The Texas Company, declared that the passage of the bill would result in total disruption of an industry which contributes more than any other to Texas.

He quoted from a report by Congressman Sam Rayburn and Dr. W. M. W. Splawn, issued in March of this year.

"Oil pipe lines are found to be plant

Railroad Commission *Charged in House Report With* Negligence

Austin, Texas.—Negligence, inefficiency and political expediency are among the charges fixed against proration administration of the Texas Railroad Commission by the majority report of the Texas House Committee on Oil, Gas and Mining, which has been taking testimony concerning the enforcement of proration in East Texas.

The majority report was adopted nine to five last week, while a minority report was filed.

Findings of the majority report, written by R. J. Long, chairman of the committee, will be used as the basis for legislation, seeking the formation of a Natural Resource Commission to take jurisdiction of the oil and gas duties now held by the railroad commission.

Use of inexperienced men is one reason given by the majority report for failure of proration enforcement in East Texas. It cites the use of 40 men under Luther Swift, who turned in 176 violation reports to the commission; while 120 men were put into the field under Homer Pierson last fall. Of the force employed under Pierson 64 never had had oil field experience, while 47 had had various periods of experience. The report further charges that many of the inexperienced men were added to the field force in payment of political obligations, 55 being added shortly after the election.

Failure of the commission to act when reports of violations were made, lack of cooperation with the attorney general, presence of 100,000 barrels daily of excess oil, lack of meters on refineries and loading racks are among the charges of inefficiency in the field.

Another charge of the report is the effect that invalid orders have been written when different orders could have withstood tests of the courts. The majority report also makes the point that most of the court action has resulted in injunctions against the orders of the commission rather than aaginst the statutes under which orders were written.

In the main the majority report deals with the administration of proration orders in East Texas. The Texas Panhandle, however, was cited as further evidence of improper handling of oil and gas resources.

The difficulty of enforcing proration orders was cited in the minority report as the reason for existing conditions rather than inefficiency of employes and field executives. This report also brings in the contention that much of the evidence heard was hearsay and opinion. Minority members also claim that commission employes are efficient and that no political debts were paid in building the field personnel.

facilities in an integrated industry. They are very different from railroads, in that railroads carry all manner of freight, wheras oil pipe lines are limited to one product. Pipe lines have been built primarily by oil companies.

"If the oil companies were forced to sell the pipe line companies, who would buy them, and who would build to the newly discovered fields?"

Further, he declared the proposal unconstitutional. It has been held uniformly that the rights of existing corporations and their stockholders, "cannot be so changed or altered as to violate the contractural obligations between the state and the corporation."

He said that the legislature could change the law "to prohibit future organizations of pipe line companies controlled by other companies, but to attempt to apply that change to corporations which were legally organized, would clearly disturb the contractural relation into which the state and the corporation entered when the state authorized the corporation to do business in Texas."

Gen. Wolters declared that many independent pipe line companies did not have their stock in the hands of a small group, but like The Texas Company, had many stock holders.

He argued that the earnings of the pipe line companies which are reported to the railroad commission do not give a proper picture of conditions which would result if the pipe lines operated independently. It includes earnings on both inte.state and intrastate commerce.

If the earnings from Texas alone were considered, the average return on the investment for 1932 would be about 13.5 per cent, while under the new tariffs recently promulgated by the commission, the return will approximate 10 per cent or less.

Gen. Wolters pointed out that under the present statute, common carrier pipe line companies are common purchasers as well. This means that they must purchase from other producers in proportion to their own production.

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Under the terms of the new statute, it will be to their interest to open up their own production and ship it over the common carrier pipe line to their own refineries. Of course, the refinery will not have the capacity to handle this oil and that of other producers as well, which will result in the elimination of this market for the independent producer.

President's *Conference Will Consider* Interstate Compact

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"Stability in this industry is important to the whole business structure," the secretary declared.

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"The present oil needs of the nation are placed at approximately two million barrels of oil per day," he continued. "Present production is estimated at from 2,250,000 to 2,500,000 barrels a day. That the industry may prosper it is necessary that a fair price per barrel be paid for oil poduced. Overpoduction leads to unprofitable, low prices in oil as in wheat or any other commodity. The problem is one of so regulating production that it will not be in excess of needs, so that the price will not be unprofitably low, and the waste of this natural resource prevented."

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BAKER—Calls the Roll on Coastal Fields

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EDNA	BUCKEYE
SUGARLAND	McFADDEN
CONROE	HITCHCOCK
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5½	5-3/16	...	20	10
5-9/16	5 Drill Pipe	...	...	8
5¾	...	5¾	19.5	10
5¾	...	5¾	22.5	10
6⅝	6¼	6⅝	20	8
6⅝	6¼	6⅝	24	8
6⅝	6¼	6⅝	20	10
6⅝	6¼	6⅝	26	10
7	6⅝	7	24	8
7	6⅝	7	24	10
Special Alloy		7	28.3	10
7⅝	7¼	7⅝	26.4	8
7⅝ External Upset		...	26.4	8
8⅛	...	8⅛	32	10
8⅝	8¼	8⅝	32	8
8⅝	8¼	8⅝	32	10
9	8⅝	9	34	8
9	8⅝	9	40	8
Special Alloy	...	9	41.2	8
9⅝	9¼	9⅝	36	8
9⅝	9¼	9⅝	40	8
Special Alloy	...	9⅝	44.3	8
10¾	...	10¾	40.5	8
10¾	...	10¾	45.5	8
11¾	...	11¾	54	8
13	12½	...	50	8
13⅜	...	13⅜	54.5	8
13⅜	...	13⅜	61	8
16	15½	16	70	8
16	...	16	65	8
16	...	16	75	8

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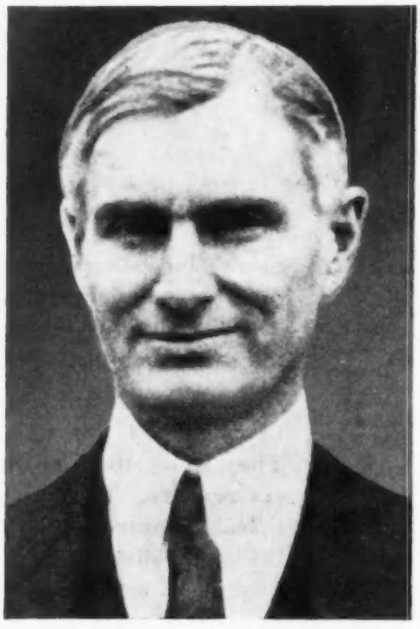
Geologists Start *Tuesday With Preliminaries of* Houston Meeting

Houston.—Geologists, geophysicists and paleontologists from all parts of the United States are expected to begin arriving in Houston early this week for annual meetings of the American Association of Petroleum Geologists, the Society of Petroleum Geophysicists, and the Society of Economic Paleontologists and Mineralogists, to be held concurrently at the Rice Hotel Thursday, Friday, and Saturday, March 23, 24, and 25.

J. P. D. Hull, of Tulsa, business manager of the geologists' association, is scheduled to arrive in Houston Monday in preparation for annual meetings, which have been drawing crowds of well over 1000 persons in recent years; and committee meetings ahead of the official opening of the conventions will be held on Tuesday and Wednesday, while on the latter day there will also be an important business meeting.

Varied Program

The three-society convention will be opened offcially on Thursday, March 23, with an address of welcome by the Mayor of Houston, and thereafter will begin presentation of the comprehensive technical program, a large number of papers, covering a wide range of subject matter, having been scheduled. A complete list of those papers as planned tentatively was published in THE OIL WEEKLY, February 20, 1933. The technical program has been prepared under direction of Ralph D. Reed, Los Angeles, editor of the geologist association publications, and Donald C. Barton, Houston, chairman of the technical program committee. Among the numerous papers there will be several of very timely interest dealing with Gulf Coast fields and geology, which have been attracting widespread attention in recent months. The executive committee has voted not to charge a registration fee for the convention.



DR. FREDERIC H. LAHEE
President of the American Association of Petroleum Geologists

—Photo by Bachrach

PAUL WEAVER
President of the Society of Petroleum Geophysicists

Aside from the technical papers, features of the Houston convention will include the annual election of officers on Friday; a combination banquet-entertainment-dance Friday night, March 24; a golf tournament at River Oaks country club; a field trip to the new Conroe oil field, Montgomery County, Saturday afternoon, March 25; and a field trip Sunday, March 26, to the Sugarland oil field and the sulphur mine at New Gulf (Boling dome), Fort Bend and Wharton Counties, respectively, lunch to be served at New Gulf.

Present officers of the American Association of Petroleum Geologists are as follows: Frederic H. Lahee, chief geologist, Sun Oil Company, Dallas, president; Robert J. Riggs, chief geologist, Indian Territory Illuminating Oil Company, Bartlesville, Oklahoma, vice-president; William B. Heroy, chief geologist, Sinclair Exploration Company, New York, secretary-treasurer; and Ralph D. Reed, chief geologist, The Texas Company of California, Los Angeles, editor.

Paleontologists

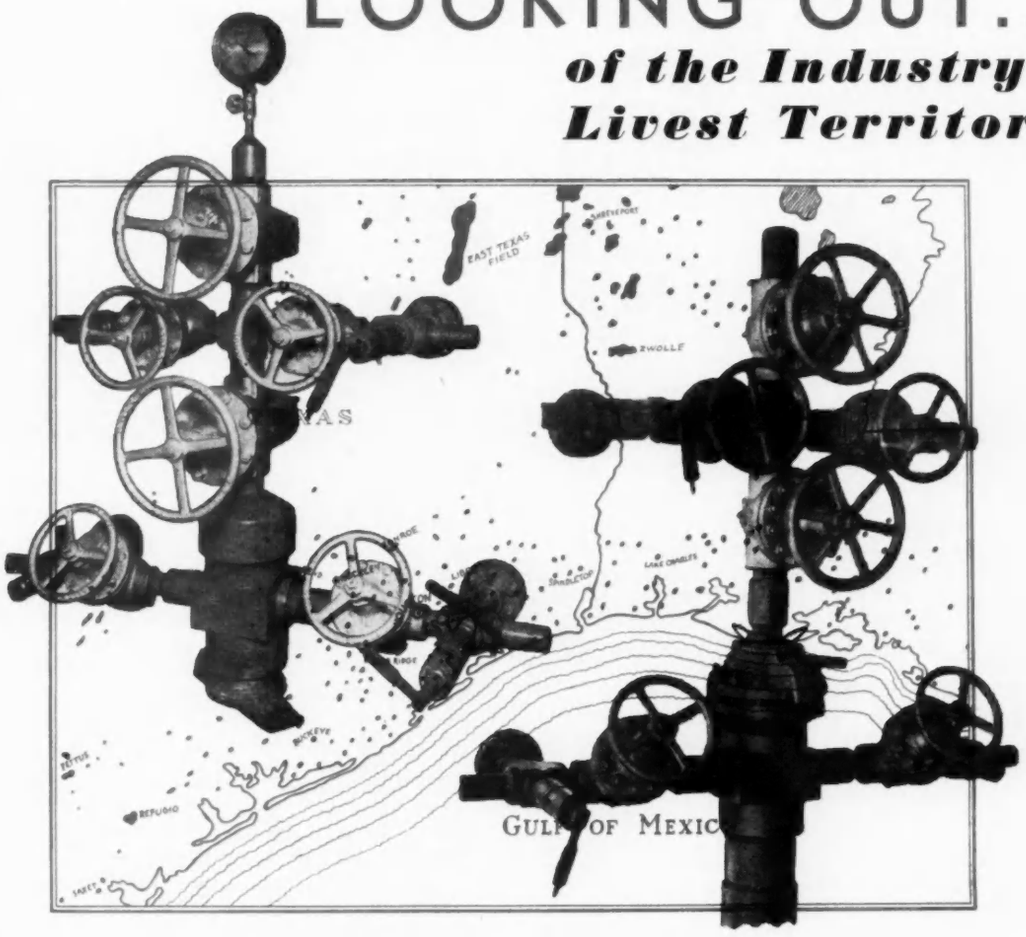
The Society of Petroleum Geophysicists, officially connected with the geologists' association as a technical division, will hold sessions jointly with the geological group in some instances and separately in others. Its officers include Paul Weaver, chief geophysicist, Gulf Production Company, Houston, president; G. H. Westby, head of the geophysical department, Empire Oil & Refining Company, Bartlesville, Oklahoma, vice-president; John F. Weinzierl, consulting geologist and geophysicist, Houston, secretary-treasurer; and Ludwig W. Blau, chief geophysicist, Humble Oil & Refining Company, Houston, editor.

The Society of Economic Paleontologists and Mineralogists, also officially connected with the geological association as a technical division, will similarly have a separate program in addition to attending general sessions of the three scientific groups. Present officers of the paleontological society are: G. Dallas Hanna, Associated Oil Company, San Francisco, president; James A. Waters, Sun Oil Company, Dallas, vice-president; Gayle Scott, Texas Christian University, Ft. Worth, secretary-treasurer; and Raymond C. Moore, University of Kansas, Lawrence, editor.

G. DALLAS HANNA
President of the Society of Economic Paleontologists and Mineralogists

ON THE INSIDE LOOKING OUT...

of the Industry's Livest Territory



We appreciate the break we have on location, of being in the heart of the Industry's hot spot . . . now, and apparently for years to come.

But we're not depending on location nor any other break. Operators are not buying OCT Equipment because it is available on short notice from any leading Supply House nor because an OCT Service Man is always near the Industry's most active fields, but . . .

Because OCT High Pressure Forged Steel Christmas Tree Equipment has always been built to meet the high standards required for safety, durability and ease of handling . . . at an economical price. On such a record we're depending.

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Oil Reserves *of the* Gulf Coast

ALEXANDER DEUSSEN

Consulting Geologist, Houston, Texas

IN 1921 a committee of the American Association of Petroleum Geologists was appointed to cooperate with the United States Geological Survey in estimating the oil reserves of the United States.

I was a member of this committee to formulate the data for the Gulf Coast, and after surveying the conditions at that time existing, and in the light of information then available, a reserve of approximately 2,100,000,000 barrels of oil was estimated for the Gulf Coast, out of a total of 9,150,000,000 barrels estimated for the United States as a whole.

The reserve indicated at that time for the Gulf Coast was considerably larger than that for any other oil producing district of the country, and it is recalled that at the time the estimate was submitted, it aroused considerable comment on the part of the collaborators in this work, and by a considerable number of them was considered to be much too optimistic.

The results of this survey were later published by the United States Geological Survey, and at that time aroused considerable discussion, in view of the fact that it indicated an early exhaustion of the oil supplies of the United States.

Events shortly following proved that these figures on reserves were greatly underestimated.

While a liberal allowance was made for Gulf Coast reserves at the time in the light of then existing information, developments during the course of the 12 years since have shown that the reserves of the Gulf Coast were very much larger than any one would then have conceded would be in the realm of possibility.

It may be interesting to tabulate just a few of the important discoveries made since 1921, and to discuss some of the factors which have contributed to this change in outlook, and necessitated a considerable revision upwards.

Major Gulf Coast Fields Discovered Since 1921

	Barrels Ultimate Production
Spindle Top—flank	80,000,000
Barbers Hill	50,000,000
Sugarland	80,000,000
Thompson	200,000,000
Conroe	900,000,000
Total	910,000,000

Since 1921 the new production shown in the accompanying tabulation has been established in the Gulf Coast.

Of the 23 oil fields discovered since 1921, the following fields are of major proportions, with the following total ultimate productions approximately indicated:

New Oil Fields of Gulf Coast Discovered Since 1921

YEAR DISCOVERED		Number of Barrels Produced up to January 1, 1933
1921	Pierce Junction	25,282,543
	Orange	30,046,752
1924	Lockport	11,146,984
1925	South Liberty	14,187,374
1926	Spindle Top—flank	67,446,315
	Sulphur	5,115,807
1927	Raccoon Bend	10,443,165
	East Hackberry	6,715,938
1928	Sugarland	16,312,810
	Refugio	26,844,007
1929	Esperson	2,182,347
	Port Neches	1,924,405
	Lake Barre	4,258,732
	Port Barre	2,002,060
	Barbers Hill—flank	27,879,671
1930	Pettus	5,892,474
	Saxet	662,410
1931	Manvel	230,734
	Iowa	515,806
	Thompson	4,951,296
	Conroe	2,572,416
	Cameron Meadows	32,835
1932	High Island—flank	1,295,700
Total		267,942,581

It is very interesting to note that in the interval from 1926 to date, or a period of seven years, these five major discoveries have definitely brought into sight 910,000,000 barrels of oil, or approximately half of the original 2,000,000,000 barrels of oil estimated in 1921.

It is further interesting to note that of the major oil fields discovered in the period specified, the latest discovery, Conroe, in point of area 13,000 acres, with an indicated ultimate production of 500,000,000 barrels of oil, surpasses by far anything previously discovered in the history of the Gulf Coast. The average field heretofore has not exceeded 1000 acres in extent, and the total ultimate productions has rarely exceeded 100,000,000 barrels of oil.

In 1921 there were 44 known salt domes, or oil producing

Spindle Top, pioneer on the cap rock and among the early ones on the flank

A scene like this is a common sight at present in the Rabb Ridge field, for approximately a dozen drilling rigs are in operation.

structures in the area of the Gulf Coast of Louisiana and Texas, and of these at that time 17 were producing oil fields of more or less consequence.

At the time of this writing there are 75 known salt domes or oil producing structures, and of these 52 are producing oil in more or less quantity.

In the interval of 12 years the number of known salt domes or structures has been very nearly doubled, and the number of oil fields has been trebled.

In addition to the 75 known salt domes or structures, there are at the present time in addition approximately 100 geophysically located prospects, a considerable number of which will unquestionably in the future develop into oil fields.

It is therefore very easy to see that the reserves of the Gulf Coast, as previously remarked, were very grossly underestimated in 1921, and these same reserves contemplated at the present time in view of existing information, if a figure were to be placed upon them, would have to be very materially increased above the figure of 2,000,000,000 barrels estimated in 1921.

It might be interesting to point out some of the improvements developed in the art of finding oil, not within the purview of our knowledge back in 1921, that have been instrumental in contributing to this result.

The first decided step forward after 1921 in the art of oil finding was the development of micro-paleontology. This got under way about 1922, and credit for this should probably be given to the late Professor E. T. Dumble, a pioneer in this field.

This art has been very rapidly developed, and its usefulness has been in developing criteria by which subsurface correlations can be made with a degree of positiveness not practical before.

The significance and value of this work is just beginning to be realized, and will become of increasing importance in the discovery of additional fields of the Conroe type.

Its usefulness has become very considerably magnified as deeper wells have become the rule in the Gulf Coast.

In the Gulf Coast sedimentary series it has happened that there are no diagnostic microscopic fossils in the Pleistocene and in the Miocene formations, and these are the sediments that we have dealt with very largely in the era when 3000-foot wells were in vogue, although to be sure around the salt domes where the deeper beds have been greatly uplifted these older beds have been recognized and identified by means of microscopic fossils definitely since 1922.

Close subsurface correlation in wildcat wells penetrating only Miocene sediments in which there were no diagnostic fossils were therefore impossible to make. If we could have made correlations in the Miocene in the earlier days, we might then have recognized highs in the subsurface, many of which no doubt escaped detection in the earlier wells on this account.

As deeper drilling has developed and wildcat wells have penetrated into the lower and deeper beds which can now be definitely correlated by means of the microscopic fossils, the discovery of new fields has been considerably facilitated.

Subsurface correlation very early in the history of the Conroe development pointed out the existence of important structure in that area—400 to 500 feet of uplift was definitely indicated in the subsurface, when the original Strake gas well was completed and before oil production was actually established.

Second, in the matter of historical development, and probably first in point of major importance, was the development of the art of geophysical surveying started in the Gulf Coast in 1924. This art has been rapidly perfected beyond its first crude and meager stages, and is directly responsible for the discovery of a very considerable number of the 52 salt domes or structures discovered since 1921. It has been directly responsible for the discovery of the following oil fields included in the list previously given.

Oil Fields Discovered Directly by Geophysics

East Hackberry	Lake Barre
Sugarland	Port Barre
Esperson	Manvel
Port Neches	Cameron Meadows

Geophysics has been indirectly responsible for the discoveries at Thompson and Conroe.

Deeper Drilling

The third factor in the discovery of new oil fields in the Gulf Coast, and possibly of equal importance with the other two is the development of the art of deeper drilling.

In 1921 a 3500-foot hole was considered to be a deep well

and at that time there were very few wells in the Gulf Coast that had penetrated below this depth.

Conroe production is now obtained at a depth of approximately 5200 feet.

The main production at Thompson is at a depth of 4850 feet and more lately production has been established at Pledger in Brazoria County at 6782 feet and at Buckeye in Matagorda County at 7925 feet.

Deeper drilling has brought into the field of our potential reserves, not within our view back in 1921, new producing horizons.

Most important of these is unquestionably the Conroe sand in the Cockfield formation of the Upper Claiborne, this being the sand that yields production at Conroe.

Repressuring Plant at Sugarland

Second in importance is the Marginulina sand of the Middle Oligocene, the main producing horizon at Thompson, Manvel, Pledger and Buckeye.

This sand promises for the future to contribute important production over the areas of portions of Harris, Fort Bend, Brazoria and Matagorda Counties.

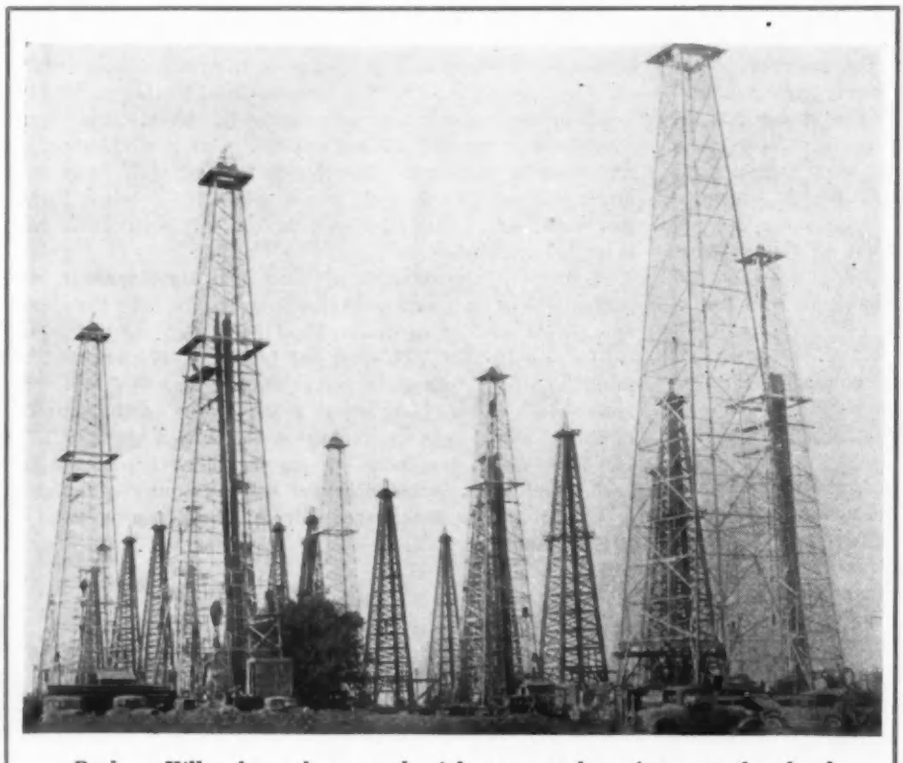
Third in importance is the Fayette and McElroy of the Jackson, the productive horizon at Raccoon Bend.

The Conroe discovery, made possible by deep drilling, and indirectly aided by geophysics, marks the beginning of a new era in Gulf Coast development. Larger than any field previously discovered, both in area and in reserves, it has brought into prominence the value and significance of the so-called "deep seated structures" not visualized back in 1921. Thompson gave the first intimation, but the true significance did not become fully apparent until Conroe developed.

Prior to the discovery of these two fields, the prolific production of the Gulf Coast had been obtained from salt domes of the piercement type, in which production was confined to a narrow circular area around the sides of the salt core, varying in width from 200 to 1000 feet.

These peripheral sands are cut by numerous faults and they pinch out against the salt core at varying depths, so that the problem of discovering oil around one of them has been a formidable and expensive one. When once discovered they have been very prolific, have yielded large production per acre, and have shown splendid profits.

At Conroe and likewise at Thompson conditions are quite different. It is true that we have had in times past fields such as Goose Creek and Orange, which have had over them a body of sands which would yield production over the entire area of the field, but these while having produced considerable quantities of oil, have likewise had sands local in extent, and the areas have been small.



Barbers Hill, where the next derrick may produce from another level

At Conroe the Conroe sand covers the entire area of the structure, 13,000 acres in extent, and the problem of making a well within the proven area is a comparatively simple one, as compared to what it has been in fields of the older type.

Prior to 1927 and the Raccoon Bend discovery, it was not considered there was much chance to discover new oil fields north of the belt in which the known shallow salt domes occurred. Raccoon Bend proved the possibilities of the "trend" north of the shallow salt dome belt, and later lead to the discovery of the Pettus fields, culminating in the Conroe discovery.

New horizons, new types of structure, more northern and outlying "trends", none of which were apparent back in 1921, have therefore very materially contributed to this new picture of Gulf Coast oil reserves, and to the present day realization that the Gulf Coast is the area of the greatest unmined oil reserves extant in the United States today.

Maps on this order too large to be
are filmed clockwise beginning in t
right and top to bottom as many fr
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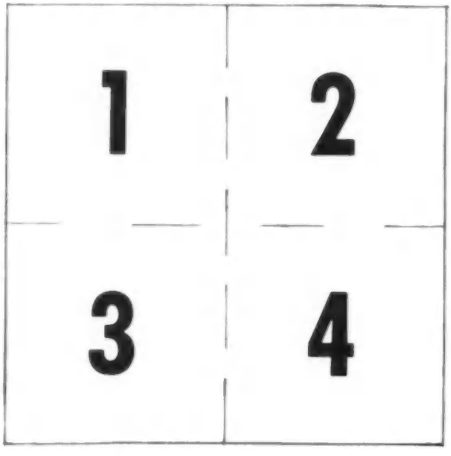

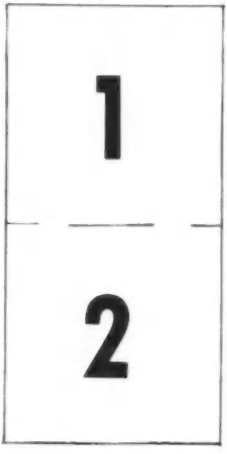

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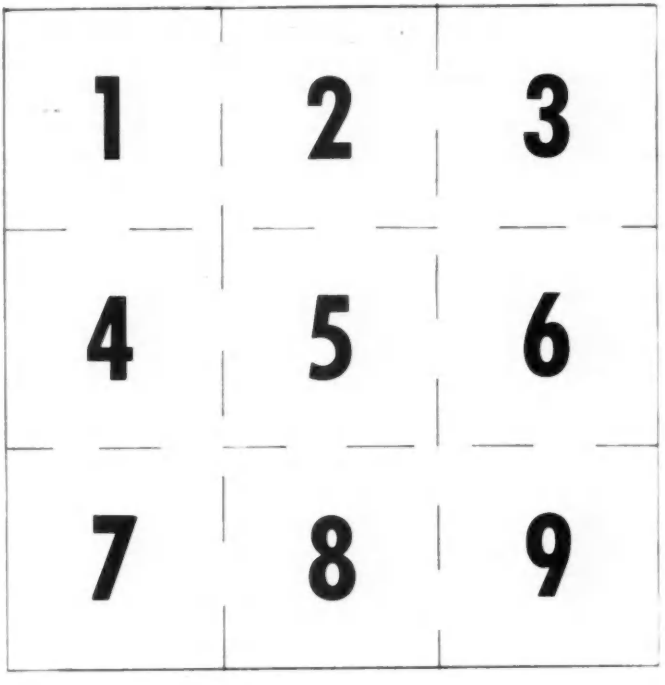

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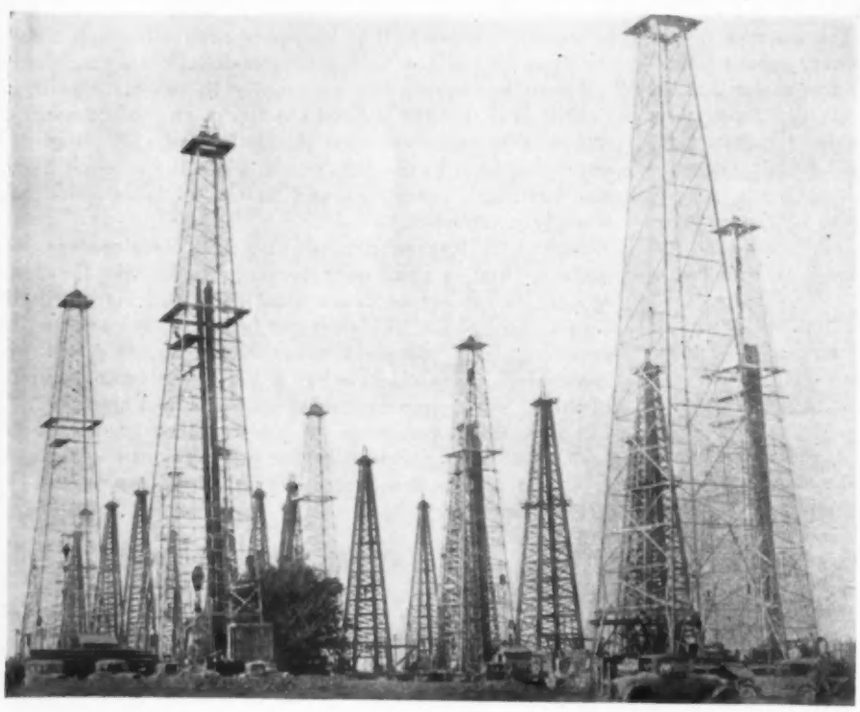

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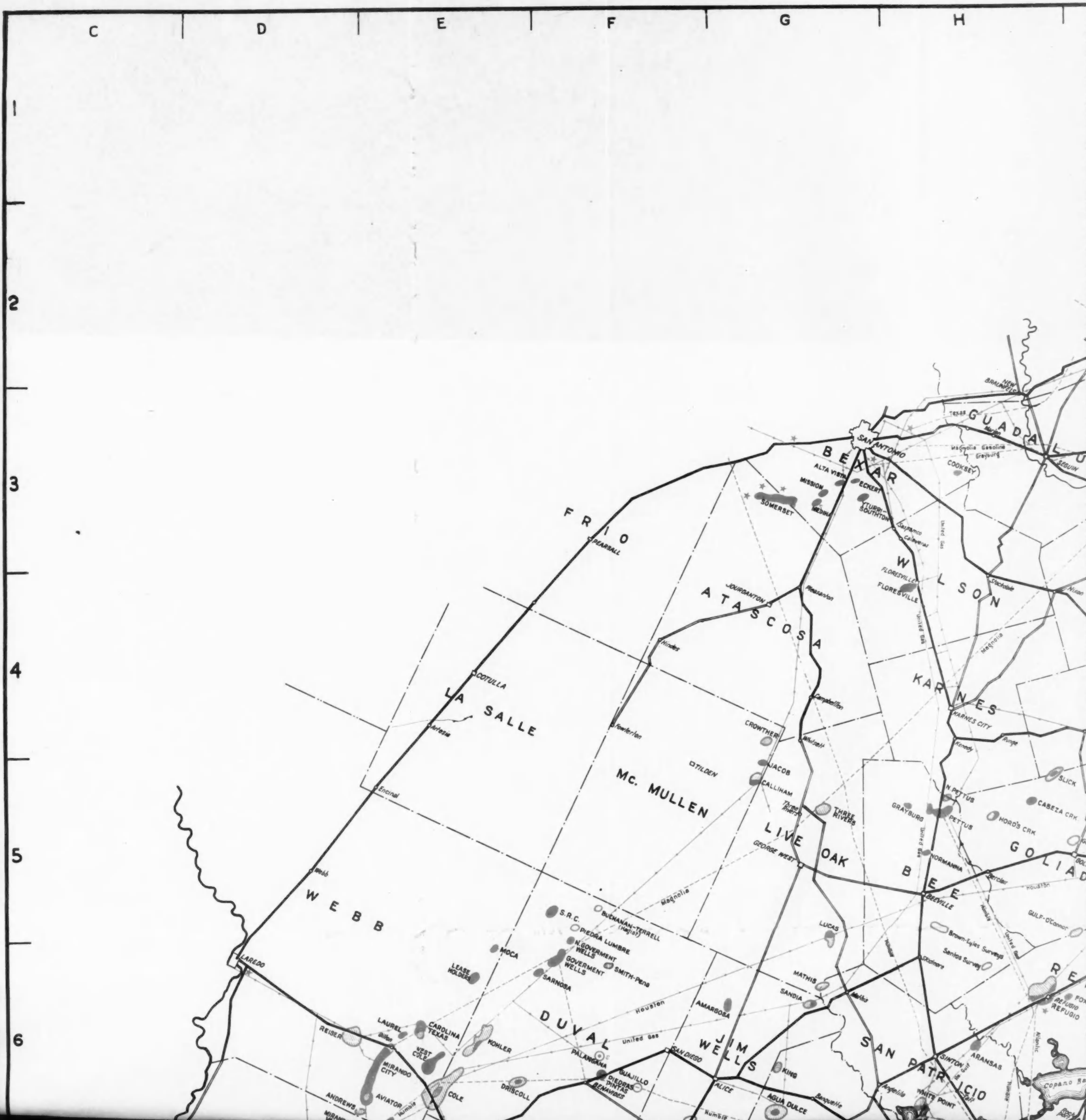
C D E F G

1 2 3 4 5

FRIO
PEARSALL
ATASCOSA
JOURDANTON
LA SALLE
COTULLA
Artesia
Encinal
WEBB
LAREDO
Mc. MULLEN
TILDEN
CROWTHER
JACOBS
CALLIHAM
LIVE OAK
GEORGE WEST
Magnolia
BUCHANAN-TERRELL (Magnolia)
S.R.C.
PEREZA LUMBRE
N. GOVERMENT WELLS
GOVERMENT WELLS
SMITH-Pena
MOCA
LEASE HOLDERS
SARNOSA
AMARGOSA
Houston
LUCAS
MATHIS
SANDIA



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NEW BRAUNFELS
Texas
GUADALU
Marion
SEGUIN
SAN ANTONIO
BEXAR
Magnolia Gasoline
Graybury
COOKSEY
ALTA VISTA
MISSION
ECKERT
SOMERSET
MEDINA
YTURRI-SOUTHTON
Saspamco
Calaveras
United Gas
FRIO
PEARSALL
WILSON
FLORESVILLE
Stockdale
Nixon
JOURDANTON
ATASCOSA
Pleasanton
Hindes
Magnolia
KARNES
KARNES CITY
Kenedy
Runge
COTULLA
LA SALLE
Artesia
Fowlerton
Campbellton
Whitsett
CROWTHER
TILDEN
JACOB
CALLIHAM
Mc. MULLEN
Encinal
SLICK
N. PETTUS
GRAYBURG
PETTUS
CABEZA CRK.
HORD'S CRK
Three Rivers
THREE RIVERS
LIVE OAK
GEORGE WEST
OAK
NORMANNA
GOLIAD
BEE
Berclair
Houston
BEEVILLE
Webb
WEBB
Magnolia
S.R.C.
BUCHANAN-TERRELL (Hagist)
PIEDRA LUMBRE
N. GOVERMENT WELLS
GOVERMENT WELLS
SMITH-Pena
SARNOSA
LUCAS
GULF-O'Connor
Brown-Lyles Surveys
Santos Survey
Skidmore
MOCA
LEASE HOLDERS
LAREDO
MATHIS
SANDIA
Mathis
REFUGIO
FOX
AMARGOSA
Houston
DUVAL
United Gas
PALANGANA
LAUREL
Bitter
CAROLINA TEXAS
REISER
WEST COLE
KOHLER
MIRANDO CITY
JIM WELLS
SAN DIEGO
SAN PATRICIO
SINTON
ARANSAS
Atlantic
Humble
GUAJILLO
PIEDRAS PINTAS
BENAVIDES
KING
DRISCOLL
COLE
AVIATOR
ANDREWS
ALICE
AGUA DULCE
Banquete
Humble
Angelita
WHITE POINT
TAFT
Copano Bay

H I J K L M N O P Q

PALESTINE
CHEROKEE
NACOGDOCHES
SHELBY
PANOLA
PICKERING
SHELBYVILLE
CENTER
ROBERTS ON
FRANKLIN
LEON
CENTERVILLE
HOUSTON
CROCKETT
MILAM
CAMERON
THRALL
CHAPMAN
MADISON
MADISONVILLE
BRAZOS
BRYAN
TRINITY
GROVETON
ANGELINA
LUFKIN
CHIRENO
SAN AUGUSTINE
SABINE
AUSTIN
TRAVIS
BURLESON
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BASTROP
YOAST
CALDWELL
LOCKHART
LULING
GUADALUPE
CALDWELL
BUCHANAN
DALE
SALT FLAT
WASHINGTON
GIDDINGS
CARLOS
GRIMES
WALKER
HUNTSVILLE
POLK
LIVINGSTON
COLDSPRINGS
SAN JACINTO
SUNSHINE
TYLER
WOODVILLE
JASPER
NEWTON
BEAUMONT
FAYETTE
CLAY CRK
BRENHAM
YARBORO
MONTGOMERY
CONROE
WALLER
AUSTIN
COLORADO
GONZALES
LAVACA
DEWITT
VICTORIA
JACKSON
MATAGORDA
REFUGIO
CALHOUN
ARANSAS
GOLIAD
HARRIS
HOUSTON
LIBERTY
HARDIN
ORANGE
JEFFERSON
CHAMBERS
CALCASIEU
CAMERON
GALVESTON
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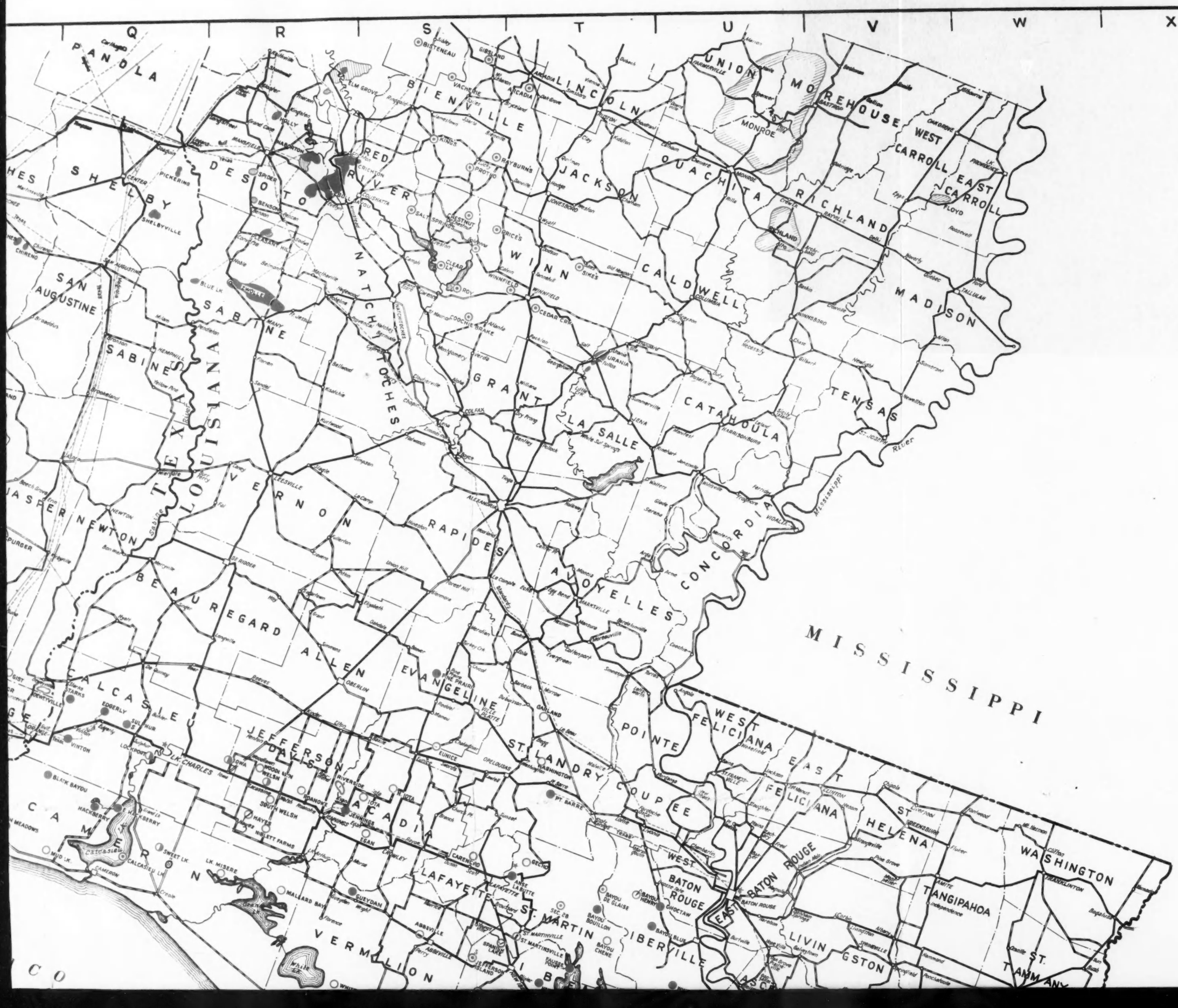
MATAGORDA
Galveston Bay
Matagorda Bay
West Bay
OF MEXICO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SAN AUGUSTINE
SABINE
NATCHITOCHES
RED RIVER
BIENVILLE
WINN
JACKSON
LINCOLN
UNION
MOREHOUSE
WEST CARROLL
EAST CARROLL
OUACHITA
RICHLAND
CALDWELL
MADISON
TENSAS
CATAHOULA
LA SALLE
GRANT
CONCORDIA
AVOYELLES
RAPIDES
VERNON
BEAUREGARD
ALLEN
EVANGELINE
CALCASIEU
JEFFERSON DAVIS
ACADIA
LAFAYETTE
ST. MARTIN
IBERVILLE
POINTE COUPEE
WEST FELICIANA
EAST FELICIANA
ST. LANDRY
WEST BATON ROUGE
EAST BATON ROUGE
ST. HELENA
TANGIPAHOA
WASHINGTON
ST. TAMMANY
LIVINGSTON
MISSISSIPPI
Mississippi River
TEXAS
LOUISIANA
CAMERON
VERMILION
MONROE
SHREVEPORT
LK. CHARLES
ALEXANDRIA
NEW ORLEANS

MEXICO

ZAPATA
JIM HOGG
STARR
HIDALGO
BROOKS
KENEDY
WILLACY
CAMERON
DUVAL
JIM WELLS
NUECES
SAN PATRICIO
KLEBERG

LAREDO
MOCA
LEASE HOLDER
N. GOVERMENT WELLS
GOVERMENT WELLS
SMITH-Pena
SARNOSA
LAUREL
CAROLINA TEXAS
REISER
WEST COLE
KOHLER
MIRANDO CITY
ANDREWS
AVIATOR
COLE
DRISCOLL
PALANGANA
GUAJILLO
DIEDRAS PINTAS REMAVIDES
AMARGOSA
SAN DIEGO
ALICE
KING
AGUA DULCE
BEN BOLT
STRATTON
SAXET
SANDIA
MATHIS
SINTON
ARANSAS
WHITE POINT
Nueces Bay
CORPUS CHRISTI
Corpus Christi Bay
KINGSVILLE
Baffins Bay
MIRANDO VALLEY
ALBERCAS
HENNE-WINCH PARISS
JENNINGS
CUELLAR
ESCOBAS
RANDADO
ALWORTH
CHARCO REDONDO
HEBBRONVILLE
REALITOS
CONCEPCION
PREMONT
PALO BLANCO
ALTA VERDE
ALTA MESA
GYP HILL
PALFURRIAS
PINTA HILL
ROMA
LOS OLMOS
RIO GRANDE CITY
Rio Grande Valley
San Perdyce
Mission
Port Allen
EDINBURG
Rio Grande River
Raymondville
Sebastian
Combes
Harlingen
San Benito
Olmito
BROWNSVILLE
Laguna Madre

C D E F G H

6 7 8 9 10

TEXAS–LOUISIANA GULF COASTAL REGION

SHOWING OIL & GAS FIELDS & PROSPECTS, PIPE LINES, REFINERIES & PRINCIPAL HIGHWAYS

MAP PREPARED & COPYRIGHTED

THE OIL WEEKLY

HOUSTON, TEXAS

1933

PRICE $1.00

DRAWN BY GEO. M. DOUGHERTY-GULF COAST ENG. CO.
HOUSTON, TEXAS

SCALE IN MILES

8 4 0 8 16 24 32 40 48 56

LEGEND

OIL FIELDS
- Salt Dome Type
- Probable Deep Salt Dome
- Structures Other Than Regular Salt Dome

OTHER FIELDS
- Sulphur Prodn. On Salt Dome
- Gas Production
- Oil and Gas Production

OIL FIELD PROSPECTS (GEOLOGICAL OR GEOPHYSICAL)
- Known Salt Dome
- Salt Dome Type Prospect
- Prospect Other Than Salt Dome Type

Oil Pipe Lines | Gas Pipe Lines | ★ Refineries | Paved or Hardsurfaced Rds. | Shell or Gravel Rds. | Unimproved Rds.

GULF OF MEXICO

N

Texas Gulf Coastal Region Oil and Gas

A
Ace 3-O
Addicks 4-M
Agua Dulce 6-G
Albercas 6-E
Aldine 4-M
Allen 6-L
Alleyton 4-K
Almeda 5-M
Altair 4-K
Alta Mesa 6-E
Alta Verde 7-F
Alta Vista 3-G
Alworth 7-D
Amargosa 6-G
Anahuac 5-N
Andrews 6-D
Aransas 6-H
Ariola 5-O
Austin Bayou 6-M
Aviator 6-E

B
Bammel 4-M
Barbers Hill 5-N
Batson 4-O
Beasley 4-L
Ben Bolt 6-F
Big Creek 5-L
Big Hill (Jefferson) 5-O
Big Hill (Matagorda) 6-K
Black Bayou 5-P
Bloomington 5-I
Blue Ridge 5-M
Boling 5-L
Bolivar Peninsula 6-N
Bonney 5-M
Branyon 3-I
Brenham 3-L
Brown-Lyles Surveys 5-H
Bryan Heights 6-L
Buchanan 3-I
Buchanan-Terrell 5-F
Buckeye 6-K

C
Cabeza Creek 5-H
Callham 5-G
Carlos 2-M
Carolina-Texas 6-E
Cat Springs 4-L
Cedar Bayou 5-N
Cedar Lane 6-L
Chapman 2-K
Charco-Redondo 2-D
Cheek 5-O
China 5-O
Chireno 2-P
Citrus Grove 6-K
Clay Creek 3-L
Clemens 6-L
Cleveland 4-N
Clodine 4-L
Clute 6-L
Cole 6-E
Concepcion 7-F
Conroe 4-N
Cooksey 3-H
Cove 5-N
Coyle-Concord 4-K
Crowther 4-G
Cuellar 7-D

D
Dale 3-I
Damon Mound 5-L
Danbury 6-M
Darst Creek 3-I
Davis Hill 4-N
Devers 5-O
Devils Elbow 6-L
Deer Park 5-M
Deweyville 5-P
Dickinson 5-M
Driscoll 6-E

E
Eagle Nest Lake 5-L
East Goliad 5-I
East Yoakum 4-J
Eckert 3-G
Edna 5-J
Escobas 7-D
Esperson 5-N
Eureka 4-M

F
Fannett 5-O
Floresville 4-H
Fox 6-I
Francitas 5-K
Fresno 5-M

G
Ganado 5-J
Genoa 5-M
Gist 5-P
Glenflora 5-K
Goliad 5-I
Goodwin 3-M
Goose Creek 5-N
Government Wells 6-F
Grayburg 5-H
Green's Lake 6-M
Grigsby 4-O
Guajillo 6-F
Gulf-O'Connor 5-I
Gyp Hill 7-F

H
Hale 4-N
Halls Bayou 6-M
Hamshire 5-O
Hankamer 5-O
Hawkinsville 6-L
Heiskell 5-N
Hynne-Winch-Farriss 7-F
High Island 6-G
Hilje 5-K
Hitchcock 6-M
Hockley 4-I
Hordy Creek 5-H
Hoskins 6-M
Hull 5-O
Humble 4-N
Hungerford 5-I

J
Jefferson Coast 6-O
Jennings 7-D
Jacob 4-G

K
Keenan 5-J
King 6-G
Kingsville 7-G
Kohler 6-I

L
La Belle 5-O
Lake Jackson 5-N
Larremore 3-I
Laurel 6-E
Leach 5-K
Leaseholders 6-E
Lion 6-I
Lockwood 5-L
Lolita 5-J
Long Point 5-I
Los Olmos 8-O
Lost Lake 5-N
Louise 5-K
Lucas 5-G
Luling 3-I
Lytton Springs 2-I

Louisiana Gulf Coastal Region Oil and Gas

A
Abbeville 6-S
Anse La Butte 6-S
Arcadia 1-T
Avery Island 7-S
Avoca 7-U

B
Barataria 8-V
Batiste 9-W
Bay Marchand 9-V
Bayou Blue 6-T
Bayou Bouillon 6-T
Bayou Chene 6-T
Bayou de Glaise 6-T
Bayou Henry 6-T
Bay St. Elaine 9-U
Belle Island 8-T
Benson 2-R
Bistineau 1-S
Black Bayou 6-P
Blue Lake 2-Q
Bull Bayou 1-R

C
Caillou Island 9-U
Calcasieu Lake 6-Q
Cameron Meadows 6-P
Carencro 6-S
Cedar Creek 2-T
Chacahoula 8-U
Charenton 7-T
Chestnut 2-S
Choctaw 6-T
Clear Lake 2-S
Coochie Brake 2-S
Cote Blanche 7-S
Crichton 1-S

D
Darrow 7-U
Dog Lake 9-U

E
East Bay Junop 9-T
East Hackberry 6-Q
Edgerly 3-Q
Egan 6-R
Elm Grove 1-R
Eunice 5-S

F
Fausse Point 7-T
Floyd 2-V
Four Island 9-U

G
Garden Island Bay 10-X
Garland 5-T
Gecho 6-T
Gibsland 1-S
Glenwild 7-T
Goldonna 2-S
Gueydan 6-R

H
Hackberry 6-Q
Hayes 6-R
Holly 1-R
Houma 6-U
Houma Townsite 8-U
Iota 5-R
Iowa 3-R

J
Jefferson Island 6-S
Jennings 5-R
Johnson's Bayou 6-P

K
Kings 1-S

L
Lake Barre 9-U
Lake Bully Camp 9-V
Lake Hermitage 9-V
Lake Misere 6-R
Lake Netherlands 8-V
Lake Pelto 9-U
Lake Salvador 8-V
Lake Washington 9-W
Leesville 9-V
Lockport 8-Q

Special Supplement to **THE OIL WEEKLY**

H I J K L M N O P Q

Gulf Coastal Region Oil and Gas Fields and Prospects

Deweyville	5-P	Hankamer	5-O		M	Pickering	1-Q	Saxet	7-G
Dickinson	5-M	Hawkinsville	6-L	McFaddin	6-O	Piedra Lumbre	5-R	Shelbyville	2-Q
Driscoll	6-E	Heinkell	5-N	Mael Island	6-K	Piedras Pintas	6-F	Sheppards Mott	6-K
		Henne-Winch-Fariss	7-F	Mancha	4-K	Pierce Estate	5-L	Slick	5-H
	E	High Island	6-O	Manford	3-I	Pierce Junction	5-M	Slick McFaddin	5-I
Eagle Nest Lake	5-L	Hilje	5-K	Manvel	5-M	Pilant Lake	5-L	Smithers Lake	5-L
East Golfad	5-I	Hitchcock	6-M	Marianna	6-I	Pinehurst	3-M	Smith-Pena	6-F
East Yoakum	4-J	Hockley	4-L	Markham	5-K	Pinita Hill	8-P	Smith Point	5-N
Eckert	5-G	Hords Creek	5-H	Mathis	6-G	Pledger	5-L	Somerset	3-G
Edna	5-J	Hoskins	6-M	Mirando City	6-E	Plummer	5-O	Sour Lake	5-O
Encinas	7-D	Hull	5-O	Mirando Valley	6-D	Port Lavaca	6-J	South Liberty	5-N
Esperson	5-N	Humble	4-N	Mission	5-G	Port Neches	5-P	South Medina	3-G
Eureka	4-M	Hungerford	5-L	Moca	6-E	Premont	7-F	Spear	5-P
				Morales	5-J			Spindle Top	5-P
	F		J	Moss Bluff	5-N		R	Spurger	4-P
Fannett	5-O	Jefferson Coast	6-O	Mykawa	5-M	Rabb Ridge	5-L	S. R. C.	5-F
Floresville	4-M	Jennings	7-D			Raccoon Bend	3-L	Stratton	7-G
Fox	6-I	Jacob	4-G		N	Randado	7-D	Stratton Ridge	6-L
Francitas	5-K			Nacogdoches	2-P	Realton	7-F	Sugarland	5-L
Fresno	5-M		K	Nash	5-L	Red Bluff	5-N	Sunshine	3-O
		Keeran	5-J	Needville	5-L	Refugio	6-H		
	G	King	6-G	Normanna	5-H	Reiser	6-D		T
Ganado	5-J	Kingsville	7-G	North Cleveland	3-N	Richmond	5-L	Telferner	5-J
Genoa	5-M	Kohler	6-E	North Dayton	4-N	Rio Grande City	8-D	Thrall	2-K
Gist	5-P			N. E. Alleyton	4-K	Rockland	3-P	Three Rivers	5-G
Glenflora	5-K		L	North El Campo	5-K	Roma	8-D	Tomball	4-M
Goliad	5-I	La Belle	5-O	North Government Wells	6-F	Russek	4-J		
Goodwin	3-M	Lake Jackson	5-N	North Pettus	5-H	Ryan Survey	4-J		V
Goose Creek	5-N	Larremore	3-I	North Vidor	5-P			Van Vleck	5-K
Government Wells	6-F	Laurel	6-E	Nursery	5-I		S	Vidor	5-P
Grayburg	5-H	Leaseholders	6-E			Salt Cedars	5-N	Votaw	4-O
Green's Lake	6-M	Lion	6-I		O	Salt Flat	3-I		
Grigsby	4-O	Lockwood	5-L	Ogburn	4-M	Sandia	6-G		W
Guajillo	6-P	Lolita	5-J	Orange	5-P	Sandy Point	5-L	Waller	3-M
Gulf O'Connor	5-I	Long Point	5-L	Orchard	4-L	San Felipe	4-L	West Cole	6-E
Gyp Hill	7-F	Los Olmos	8-D	Ottine	3-I	San Leon	5-N	West Columbia	5-L
		Lost Lake	5-N	Oyster Bayou	6-N	Santos Survey	6-H	White Point	6-H
	H	Louise	5-K			Sarah Gray	5-P		
Hale	4-N	Lucas	5-G		P	Saratoga	4-O		Y
Halls Bayou	6-M	Luling	3-I	Palangana	6-F	Sargent	6-L	Yarboro	3-L
Hamshire	5-O	Lyton Springs	2-I	Palo Blanco	7-F	Sarmosa	6-F	Yoast	2-J
				Peach Point	6-L	Satsuma	4-M	Yturri-Southtown	3-G
				Pettus	5-H				

Gulf Coastal Region Oil and Gas Fields and Prospects

Egan	6-R		I		M	Price's	2-S	Sulphur	3-Q
Elm Grove	1-R	Iota	5-R	Mallard Bay	6-R	Prothro	1-S	Sweet Lake	6-Q
Eunice	5-S	Iowa	5-R	Minor	8-U				
				Monroe	1-U		Q		U
	F		J	Morgan City	6-T	Quarantine	10-X	Urania	3-T
Fausse Point	7-T	Jefferson Island	6-S	Mud Lake	6-P				
Floyd	2-V	Jennings	5-R				R		V
Four Island	9-U	Johnson's Bayou	6-P		N	Rayburn's	1-S	Vacherie	1-S
				Naborton	1-R	Richland	2-U	Venice	10-W
	G		K	Napoleonville	7-U	Riverside	5-R	Vermilion Bay	7-S
Garden Island Bay	10-X	Kings	1-S	New Iberia	7-T	Roanoke	5-R	Vinton	5-Q
Garland	5-T			Niblett Farms	6-R	Roy	2-S		
Gecko	6-T		L	North Iota	5-S				W
Gibsland	1-S	Lake Barre	9-U				S	Washington	5-T
Glenwild	7-T	Lake Bully Camp	9-V		O	St. Martinsville	6-T	Wax Lake	8-T
Goldsonna	2-S	Lake Hermitage	9-W	Olevier	8-W	St. Rose	8-V	Weeks Island	7-S
Gorrydan	6-R	Lake Misere	6-R			Salt Springs	2-S	Welsh	5-R
		Lake Netherlands	8-V		P	Section 28	6-T	White Castle	7-U
	H	Lake Pelto	9-U	Patterson	7-T	Sikes	2-T	White Lake	7-R
Hackberry	6-Q	Lake Salvador	8-V	Pine Prairie	5-S	Sorrento	7-U	Winnfield	8-S
Hayes	6-R	Lake Washington	9-W	Pleasant Hill	2-R	South Welsh	5-R	Woodlawn	5-R
Holly	1-R	Leesville	9-V	Pointe Au Fer	8-T	Spanish Lake	6-S		
Houma	8-U	Lockport	5-Q	Port Pierre	5-T	Spider	1-R		Z
Houma Townsite	8-U			Potash	9-W	Starks	5-Q	Zwolle	3-R

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Conroe *and the* *Conroe* Trend

WM. V. GROSS
Staff Representative

INLAND from the Gulf of Mexico about 75 miles marks the rough middle section of a belt varying in width from 1 to 35 miles or more and extending through 15 degrees of longitude, about 900 miles, that has been subjected to a great campaign of leasing during the past 12 months. The belt extends through four states and over into a fifth. From west to east, and paralleling the Gulf shore, it passes through Texas, Louisiana, Mississippi, Alabama, and into Florida.

For no scientifically justifiable reason, this gigantic lease taking trail has come to be known as the Conroe trend. Factually, the psychological effect of Conroe's surprisingly rich reservoir sands has been to generate a belief that the hitherto avoided shoreline associated with Conroe's location has great possibilities.

Much of the so-called Conroe trend leasing can be attributed to circumstances that allowed leases to be obtained by thousands of acres for rentals and fee prices amounting to little more than taxes. And if Conroe is not the direct cause of this unprecedented activity, it most certainly has had a pronounced influence as an accelerator thereof.

What is there about Conroe field to so impress the coastal operator? Something of its geology, development history, and magnitude as a crude reservoir will best answer that natural question.

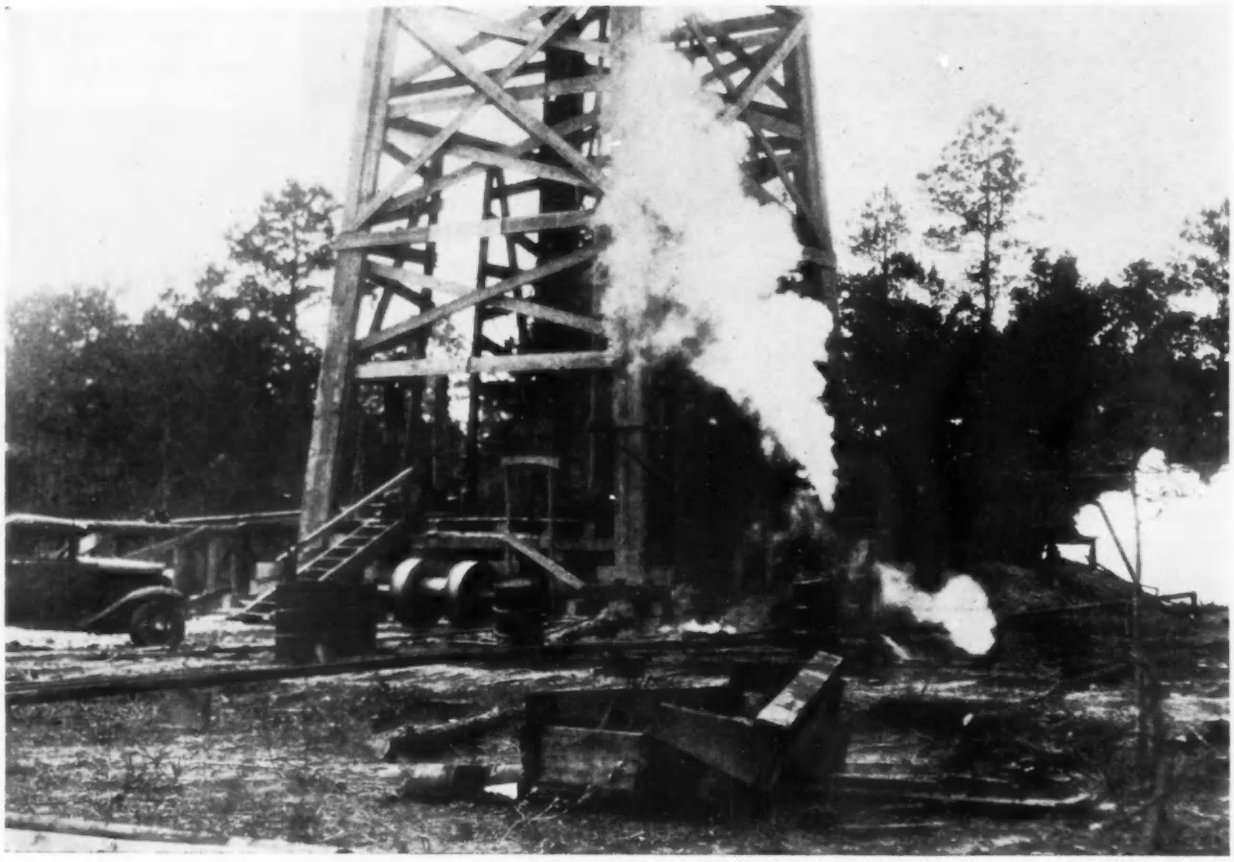
The 1933 Output

Although held under strict supervision of the Texas Railroad Commission since its early days, Conroe will have produced an estimated 5,096,816 barrels of oil by March 31. Of this, the last million barrels will have been March's share of the total recovery.

By the end of 1933, if plans for monthly increases in allowables recommended by most of the operators are sanctioned by proration enforcement authorities, Conroe will have contributed 22,015,000 barrels. Only 2,572,416 of that total will have been produced prior to 1933.

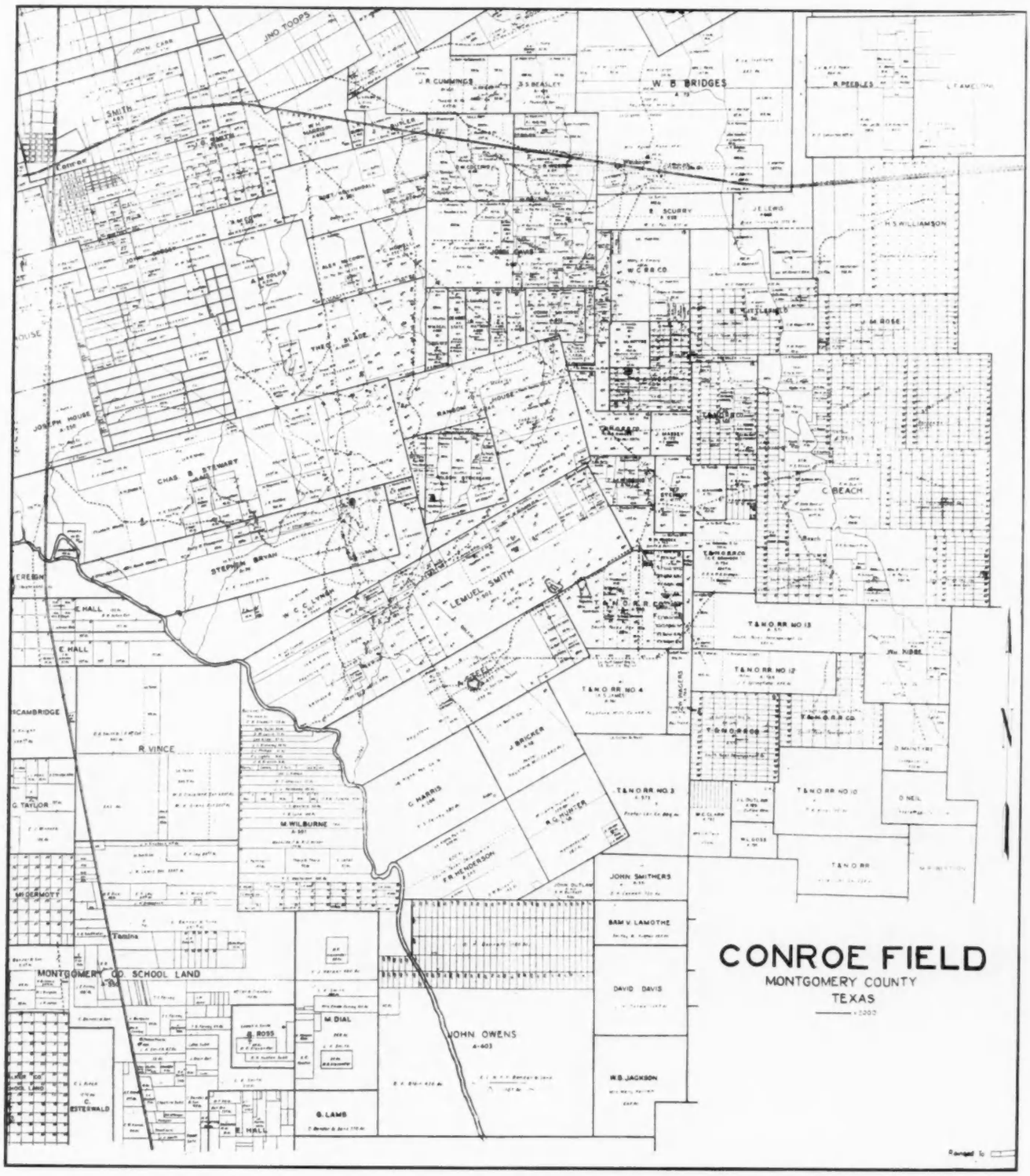
The 22 million barrels will come from 750 wells, the estimated number which will be completed by the end of 1933. By the end of March about 262 producers will have been completed; 220 had been recorded by March 10.

Before going into the geology of Conroe, a consideration of initial production in the area will give an idea of the type



Showing a type of rig used in drilling at Conroe

Belt 900 Miles Long, 75 Miles in from Coast, Gets Lease "Play" As Result of Prolific Showing in Montgomery County Field



Productive part of Conroe field, showing M. J. Munn's 5303-foot dry hole eastern outpost and G. W. Strakes Keystone Mills 1, southwest outpost in Lemuel Smith Survey. Map is part of No. 3 on Conroe prepared and for sale by Gulf Coast Engineering Co., Houston.

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Frick-Reid Stores are dedicated to the distribution of products which cement business friendships over unlimited periods and guarantee mutually profitable relationships. They have never been, are not, and never will be interested in the sale of any product on which profit is had at the expense of economy and efficiency in the hands of the customer.

The Frick-Reid conception of distribution is to cover the area served with a network of efficient stores strategically located, so that the customer may obtain the utmost economy in purchase. Whatever the industry needs and wherever it needs it, Frick-Reid strives to make it available.

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MICHIGAN
Mount Pleasant

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OHIO
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Blackwell
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Duncan
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Tulsa

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*Beaumont
Best
Big Spring
Borger
Breckenridge
Conroe
*Dallas

TEXAS (Cont.)
Electra
*Fort Worth
Houston
Kilgore
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Pyote
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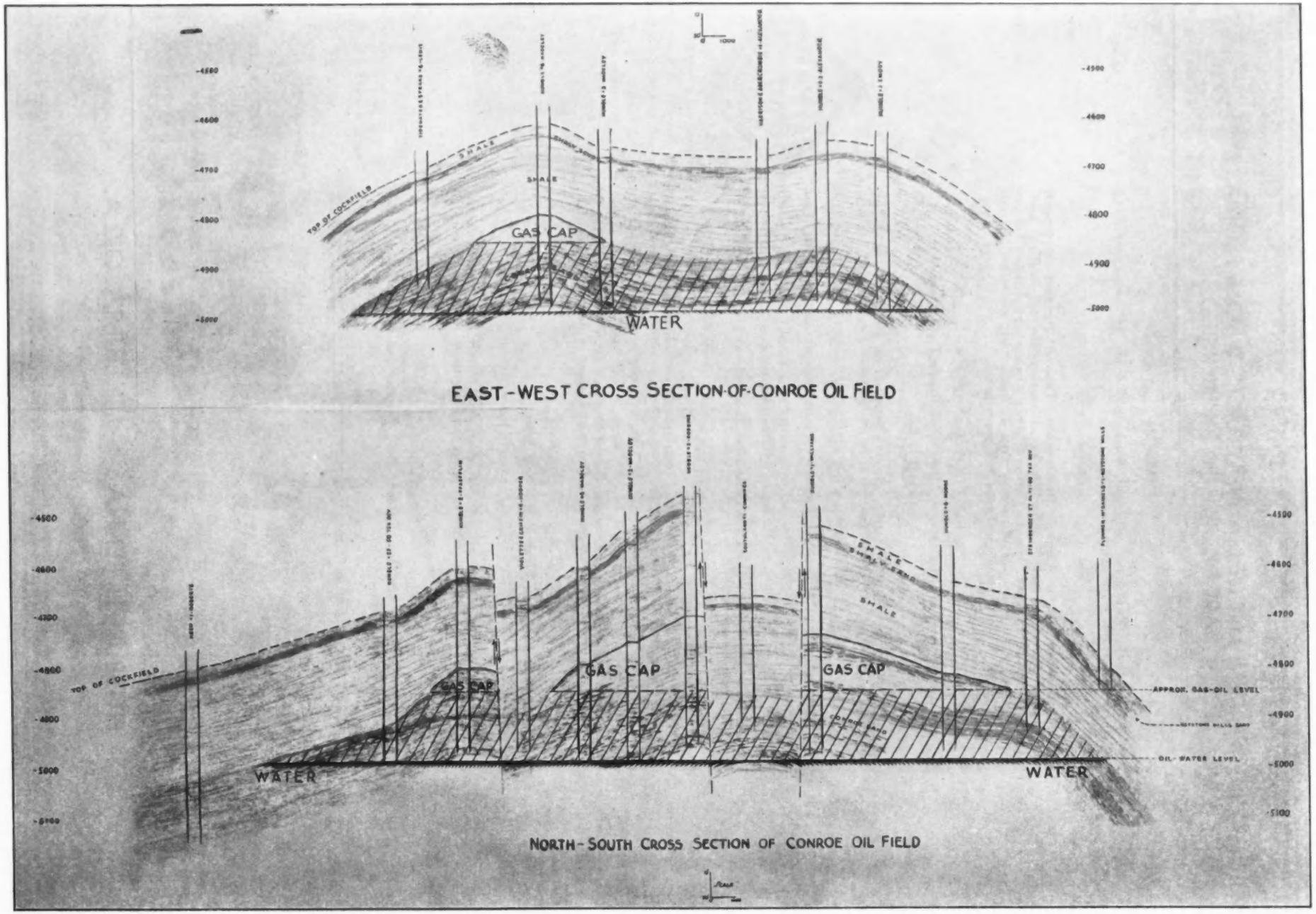
SHALE
SHALE
GAS CAP
WATER
TOP OF COCKFIELD
-4500
-4600
-4700
-4800
-4900
-5000
EAST-WEST CROSS SECTION OF CONROE OIL FIELD
SHALE
SHALE
SHALE
GAS CAP
GAS CAP
GAS CAP
WATER
WATER
TOP OF COCKFIELD
APPROX. GAS-OIL LEVEL
OIL-WATER LEVEL
-4500
-4600
-4700
-4800
-4900
-5000
-5100
NORTH-SOUTH CROSS SECTION OF CONROE OIL FIELD

and magnitude of the reservoir. In 1932, 64 producers completed had a combined initial of 109,142 barrels. In January of this year, 60 producers had a combined initial of 110,277 barrels; in February, 61 gauged 120,065 barrels. Through March 10 the combined initials of 220 oil wells was 407,666 barrels, an average of 1853 barrels per well.

System of Well Rating

An important index to the reservoir character of Conroe is that the 1853-barrel average initial represents the average well's daily potential through an half-inch choke at the most. In many instances chokes ranging down to one-sixteenth-inch diameter are used.

A Conroe well's potential has come to mean that the well's capacity to flow through the choke installed at completion time. If it makes 10 barrels an hour through an eighth-inch choke, it is rated at 240 barrels per day initial production. If it makes 10 barrels per hour through an half-inch choke, it is also given a 240-barrel initial.

Recognition of this practice in Conroe will augment the importance of a 2000-barrel well compared with, for instance, a 2000-barrel well in East Texas. Conversely, if Conroe wells were estimated initially by potentials calculated through 2½-inch tubing, many of them would produce in excess of 45,000 barrels per day. Not a few would produce 60,000 barrels, so say the engineers, and fortunately, sane operating policy will prevent this.

Another index to the reservoir character of Conroe is that tubing pressure on recent wells, those brought in during the past six months, ranges from 350 to 1600 pounds.

Geology

Conroe, Montgomery County, Texas, is a field embracing 15,000 acres as of March 10, 1933. Two sands have been found productive of oil: the Conroe sand with an estimated area of 13,000 acres (conservative), and the Cockfield with an estimated productive area of 1200 acres, based on information gotten from too little drilling. Conroe has not been proven a salt dome.

An east-west cross section of Conroe will show it to be a large domal structure with two pronounced local highs running roughly in a north and south direction. A north-south cross section of the field will show three definite faults—one being a simple fault, and the other two the result of a graben with an average 125-foot displacement and a width of 4000 feet. (For convenience, reference here to north-south cross section and east-west sections is used to denote what actually is nearer to the true run of irregularities in the coastal country, that is, northeast-southwest and northwest-southeast.)

In the Jackson series of the Eocene system of the Tertiary group, three definite markers are available to Conroe operators prior to entering the Cockfield formation, which marks the top of the Yegua, the upper member of the Claiborne series. The Cockfield, too, is a definite marker.

Faulting

Faults in the field run east and west, diminishing in throw as the edges of the field are approached. In mid-field the throw is about 125 feet, on the edge it is about 30 feet, and beyond the present limits of production it is assumed the throw diminishes to zero.

Numerous checks have been made on the extent of the faulting. The upper Conroe, or "Cockfield," sand was found in Violette and Griffin's Hooper 6 at a depth of 125 feet greater than Humble Oil & Refining Company's nearby Pfaeffflin 2, thickness of the upper sand being the same in both wells. Reference to the graben on the north-south cross section will locate Southland Oil Company's Cummings 1, and to the south of the upturn side of the fault is Humble Oil & Refining Company's Williams 1, which encountered the Conroe sand 220 feet below the top of the Cockfield, and which picked up both Cockfield and Conroe sands from 125 to 135 feet higher than they were picked up in Southland Oil Company's Cummings 1.

The dip on the southern edge of the field appears more pronounced than on the north. From data of nearest infield wells, it is assumed that if Plummer & McDaniel's Keystone Mills 1, most southerly well, had drilled to the Conroe sand, instead of completing in the Cockfield, it would have gotten water. The Conroe sand at that point dips far below the minus 4990-foot contour which marks the oil water contact.

Eight Sands

Including the two sands in the Cockfield, one of which is the "Conroe" sand, eight sands have been identified at Conroe. (Sand data came from more than 10,000 feet of cores from nearly a hundred wells). The sands are as follows:

A. 1200 feet B. 1700 feet	Oakville
C. 2400 feet D. 2600 feet	Catahoula
E. 3300 feet F. 3500 feet	Frio
G	"Cockfield"
H.	"Conroe"

Taken as they occur, the upper Oakville sand found at 1200 feet (average) is a gas sand which has shown no oil. The lower of the Oakville sands, that found at 1700 feet, has shown oil in doubtful quantities along with gas.

Both the Catahoula sands, 2400 and 2600 feet, respectively, have shown gas only, as has the upper sand in the Frio found at 3300 feet. The lower Frio sand, however, has shown some oil in wells located structurally high. This sand, at 3500 feet, is in the third of the series of the Oligocene system.

While both productive sands at Conroe are in the Cockfield formation, the upper and less important of the two has come to be known locally as the "Cockfield," whereas the lower and principal producing sand is designated as the "Conroe" sand. Generally throughout the field the two will be found separated by a layer of shale varying from 125 to 200 feet in thickness. For practical purposes the Cockfield sand herein referred to includes what is known locally as the "Strake" sand and the "Keystone Mills" sand, both of which are of limited thickness and separated only by a change in formation from oil bearing shale to oil bearing shaly sand.

The "Cockfield"

On the north-south cross section it will be seen that the top of the Cockfield in the northern part of the field will be found around minus 4850 feet. From this point it rises gradually southward to about minus 4600 feet for about 12,000 feet. At this point a fault occurs. Continuing south, the displacement causes the level of the top of the Cockfield to drop to about 4675 feet.

At this point, marked on the cross section by Violette & Griffin's Hooper 6, a second incline leading toward the graben begins, with the result that at Humble Oil & Refining's Company's Dobbins 2, about 8500 feet south of the fault, the Cockfield is picked up around minus 4430 feet. Immediately south of this, in Southland Oil Company's Cummings lease occurs the graben previously described, causing the Cockfield to drop to minus 4675 feet, approximately.

About 4000 feet south of the north limit of the graben, Williams 1 indicates the southern limit, picking up the Cockfield at around minus 4525 feet.

From this point south the Cockfield gradually becomes deeper, sloping down to minus 4800 feet, approximately, at Plummer & McDaniels' Keystone Mills 1.

On the east-west cross section of Conroe field, which represents a closer approximation to domal structure, having no

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faults, the Cockfield sand assumes a more regular appearance. Its highest point, attained in Humble Oil & Refining Company's Madeley 6 at about minus 4610 feet, marks thus far the top of one of the "highs" referred to. About 11,500 feet west of this point is another "high" found at around minus 4660 feet. Between the two is a gentle syncline with the lowest point of the top of the Cockfield being found at about 4700 feet, minus.

Productivity of Cockfield

This upper Cockfield, or "Strake," or "Keystone Mills" sand is the one in which the discovery well was completed to flow much gas and some gasoline. But in higher wells in the field the "Strake" sand has held nothing but gas. Its possibilities for production have been restricted to flank operations, according to most geologists.

One example of flank possibilities of the Strake sand is furnished by Plummer & McDaniel's south outpost, Keystone Mills 1, Ashby James Survey, in the southern part of the field, which had oil in that sand and is producing from it.

Three and a half miles northeast of Keystone Mills 1, South Gulf Drilling Company's Granger 1 carried oil in the upper Cockfield, or Strake sand. Wells on the north side found only gas in the Cockfield, with the exception of Houston Oil Company and Tide Water's Brent 1.

The average thickness of the Cockfield sand has been put at 15 feet. The lateral width of the sand is estimated at 2000 feet; its length, 3½ miles, around the periphery.

Porosity of the Cockfield sand has been put at 22 to 25 per cent. It is estimated a 25 per cent recovery will be possible from the Cockfield. Based on the 1200 acres considered likely to produce, the upper Cockfield at Conroe will have an ultimate recovery of 9,740,000 barrels. This is speculative, of course.

Additional facts concerning the Cockfield are that it is less porous and less permeable than the Conroe sand. Nor is it as thick. It is easy for the driller to determine when he is entering the Cockfield, because the Cadell, immediately above, is a hard formation, while the Cockfield is largely a brittle, shaly sand, especially at its top.

The "Conroe" Sand

As previously stated the so-called "Conroe" sand is merely a lower sand in the Cockfield formation. Its position will generally be from 150 to 200 feet below the Cockfield sand. The two are separated by an impervious layer of shale. As a result of juxtaposition caused by faulting there may be negligible communication between the two in some spots.

When the oil zone is mentioned in dealing with Conroe, it refers to the Conroe sand. It is described as extending through a vertical depth of from 120 to 140 feet, this thickness marking the distance between the oil-gas contact and the oil-water contact, the former of which is usually at about minus 4850 feet.

Discounting that portion of the Conroe sand referred to as the gas cap, the saturated portion will average about 56 feet in thickness, this average being based on 80 logs. Paradoxically, it is not thicker near the center of the field than on the edges. Represented by the minus 4990-foot water-oil contact contour, the area of the Conroe sand has been put at 13,000 acres. Others estimate it at 15,000.

A practical understanding of the relative importance of the Conroe sand in the Cockfield formation will be gotten by a comparison of its characteristics with those of other well known field sands. Based on scattered cores taken throughout the field, Conroe sands average a porosity of 26 per cent.

As to permeability, tests have shown 31 barrels per day per pound of drop in pressure at Conroe, meaning per pound of differential between shut in pressure and flowing pressure. East Texas and Breckenridge are reputed to show only 14 barrels per pound of drop. Sugarland shows 11 barrels per day per pound of drop. Opinion has been expressed the Conroe sand's permeability is the greatest in Texas.

It has been testified before the Texas Railroad Commission that the permeability of the Conroe sand is three times that of East Texas sand and nearly three times greater than that of Sugarland. That is, it will give up more oil per acre foot with less drop in pressure.

Recovery from Conroe Sand

Basing their calculations on the lower viscosity of Conroe crude, the higher permeability of Conroe sand, and the presence of a gas cap above that sand, engineers have declared that the Conroe sand probably will have a higher recovery per acre foot than even Van field, which has been held up as one of the most scientifically operated unit reservoirs in the world. Van, however, has no gas cap. Porosity of its Woodbine sand is less than that of the Conroe sand.

It is felt that continuation of the present scheme of development at Conroe, (one well to 20 acres) will make possible a 35 per cent recovery. Giving the Conroe sand 26 per cent porosity and an average saturated thickness of 56 feet, the recoverable oil from that sand will amount to more than 500 million barrels. If some way could be devised to decrease the number of wells at time of full development, the ultimate recovery might be stepped up to more than 730 million barrels.

Productive oil sands of Conroe outcrop at a point 40 miles north of the field near Trinity, in Trinity County, and in the northern part of Walker County. The continuity of the general sand body embracing both Cockfield and Conroe sands has been established by wells drilled between the field and the point of outcrop. Logs from these wells indicate an average dip of 120 feet per mile. Surface elevation at the outcrop is 200 feet greater than in Conroe field.

The Gas Caps

Existence of gas caps above both sands at Conroe is a feature which renders the field so attractive to the producer. On the north-south cross section three zones are identified as gas caps, communication between them being prevented at these points by fault blocks.

The lower cap, immediately above the produced portion of the Conroe sand, is overlain by a layer of impervious shale, preventing the gas' upward migration. (So far no evidence of fractures in the shale have been found in the fault plane sufficient to permit upward migration of the gas.) Some geologists give the shale layer a thickness varying from 175 to 220 feet.

On the east-west cross section of the field, it will be seen that only on the eastern "high" is there shown a gas cap.

Logs of many wells in the field seem to indicate the oil-gas contact line, marking theoretically the bottom of the gas cap, remains fairly constant throughout the north, middle and southern portions of the field. (Data giving such a conclusion has been offered in furtherance of an argument contending for uniformity of water level and gravity.)

Tests made show gas in the gas cap to be under pressure of 2290 pounds. This is one reason why the importance of gas caps is so prominent in any comparison made between Conroe and other flush Texas areas. It is behind the expressed opinion that the per-acre-foot recovery at Conroe will be greater than in East Texas. Utilization of the 2290-pound pressure in production of oil will be possible provided the relative position of the gas cap can be maintained. This is the wherefore of all the clamor for "top" control at Conroe. Top control at Conroe will have a great deal to do with future lifting costs and with control of the water level.

Oil-Water Level

Minus 4990 feet is generally taken as the oil-water contact in Conroe field, and wells generally are completed a safe distance above that depth. This figure is based on

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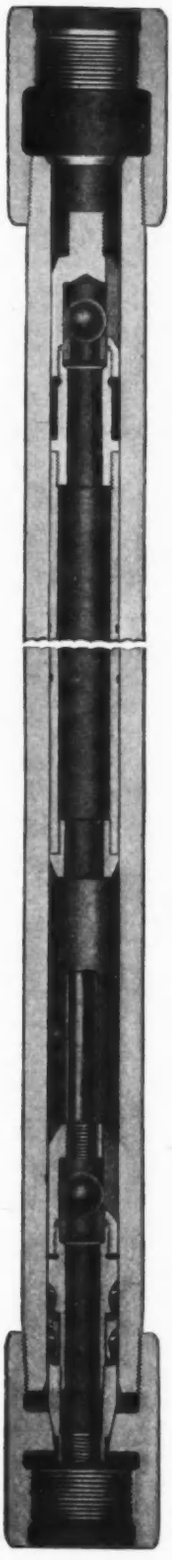

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knowledge that the water level in the north end of the field and in the center are about the same. From this it is deduced and accepted until development may prove otherwise that the water level in the south part of the field will be about the same. Constancy of the level of the oil-gas contact is presented as another reason for assuming the level of the oil-water contact to be fairly uniform.

The following data have been observed with reference to the oil-water level:

On the northwest side, water encountered..minus 4992
North of northwest, water encountered....minus 5000
On the north side, water encountered.....minus 4994
In center of field, water encountered.....minus 4991

Water underlying the Conroe sand is connate, having been left there by the sea during Eocene time when the formation of sands was laid down. Parenthetically, a majority of what has been said or published prior to this about relative positions of oil, gas and water at Conroe has called forth application of I. C. White's anticlinal theory.

Both sands in the Cockfield formation, that is, the upper sand and the Conroe sand are water driven. The source of the pressure is at the outcrop of the sand, which, as previously stated, has 200 feet more elevation than the surface at Conroe. Rain water, taken in at the source, drains by gravity to the point at which it contacts the connate water, building up a pressure. This theory is subject to some argument.

Humble Oil & Refining Company's South Texas Development Company 1 penetrated one foot into the water level. On a 15 minute drill stem test the water rose 3200 feet. Plummer & McDaniels' Roberts 1, an offset, slushed water over the top of the casing. Navarro Oil Company's Gilmore 1, John Davis Survey, likewise had concrete evidence of the part the water pressure is playing.

History

Conroe's history is an interesting one. Prior to 1925 George Choate of Houston developed some sort of an apparatus involving radio principles. His faith in its value as a geophysical surveying instrument led him to predict in 1925 that the area now covered by Conroe held a vast petroleum reserve. Reaction to this prediction was an accentuation of the nose thumbing attitude toward Conroe held by not a few prospecting geologists.

Tradition has it that Choate and M. H. LaSalle leased 4554 acres in Montgomery County from South Texas Development Company in June, 1925. Deloss Atchison was Houston agent at the time for the Albany, New York, interests which controlled the development company.

Lack of money caused Choate and LaSalle to give up the leases. But they are said to have tried again in 1927, on the same acreage, taking Alec Neuthard into partnership. Atchison received the leases back a second time. The partners could not raise enough money to drill.

LaSalle and Choate are said to be the men who interested George W. Strake, discoverer of Conroe field, in the Montgomery County land.

Jack Logan, staff representative, very ably told of the discovery of Conroe in a special article in the February 22, 1932, issue of THE OIL WEEKLY.

Development

Strake's discovery well, South Texas Development Company 1, was spudded in September, 1931. It made a negative production test at 4130 feet. Strake's well entered the upper Cockfield gas cap at around 4931 feet. From 4931-81 feet broken sandy shale giving off a slight odor of oil and gas was logged. From 4981-91 feet a solid section of sand containing an odor of oil and gas was found. Following a successful drill stem test, seven-inch casing was set at 4931 feet. By December 13 the well was producing between 15 and 20 million cubic feet of dry gas through a 3/16-inch choke. December 14 it yielded 200 barrels of 54 gravity gasoline along with the gas. Following a blowout on December 15, the well was shut in with a pressure of 1700 pounds.

Herman Heep, president of Heep Oil Corporation, recognized the importance of Strake's discovery and played his hunch, obtaining acreage on three sides of the wildcat, north, east and south. Humble Oil & Refining Company followed suit, dealing with Strake initially to obtain a majority of the acreage then considered likely. Strake retained large blocks, part of which he disposed of later to various interests.

From what was considered a probable "freak" well at first, Conroe grew in less than a year to be regarded as one of the major petroleum reserves of the Gulf Coast. It has attracted major and independent alike, although a few important operators have been reluctant to enter.

Distribution of Acreage

As of March 10, lease maps showed Humble Oil & Refining Company to be the greatest individual acreage holder in the field. Tide Water Oil Company et al ranked second, Gulf Coast Drilling and Production Company ranked third, and The Texas Company fourth.

Distribution of acreage among those holding more than 188 acres as of March 10 was as follows:

Operator—	Acres
Humble Oil & Refining Company et al	5,783.41
Tide Water Oil Company et al	2,450.11
Tide Water & Houston Oil Co. ....1,050 ac.	
Tide Water & Republic Prod. Co... 180 ac.	
Tide Water & G. W. Strake.....1,126 ac.	
Tide Water Oil Company ..... 404.97 ac.	
Gulf Coast Drilling & Production Company	1,449.00
Sun Oil Company	530.00
The Texas Company	896.00
Alpha Petroleum Corporation	600
George W. Strake (Personal)	375
Harrison and Abercrombie	412
Standard Oil Company of Kansas	188
All others	2,678
Total	15,361

With the exception of 312.06 acres to be deducted from Tide Water et al's account, (and which is not reflected in the total above of 15,361 acres) all of the above is considered proven acreage.

Field development in Conroe has progressed as indicated in the following table:

Year or Month—	Number of Wells Completed	Production Barrels
1931	1	1,000
1932	64	2,571,416
January, 1933	60	759,200
February, 1933	61	715,200
March, 1933, Estimated	82	1,050,000

March 10 the list of operators with active drilling operations or production had grown to 50. There were 224 producing wells being held down to the field's allowable production of 35,000 barrels per day.

Bottom Hole Pressure

Completion of so many wells has offered splendid opportunity for obtaining definite information on bottom hole pressures. One operator has used 54 wells scattered throughout the field. He has established that there has been a drop of 90 pounds (an average regardless of structural position) throughout the field. Original tests showed a bottom hole pressure of 2275 pounds. Later tests showed 2180 pounds.

The average gas-oil ratio of wells producing from the Conroe sand only is from 400 to 450 cubic feet per barrel, where the liner has not been set too high. This ratio obtains at the allowable recovery per well. When the wells are stepped up to 2500 barrels per day, the gas-oil ratio increases to 600 to 650 feet per barrel.

Incidentally, it was partly due to study of bottom hole

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pressures at Conroe that the opinion has been moulded that the reservoir in the Conroe sands is a continuous one, with intercommunications through its formations. Shale bodies found in the sand are not continuous over the structure as a whole. They play out, break off, so that in many spots there is direct connection between the sands.

Before going into the Conroe "trend" angle of this article, it is well to say that Conroe crude averages 39 degrees A. P. I. gravity. Grade A coastal crude averages 25 degrees. Viscosity of Conroe crude is less than that of East Texas, which is 34 seconds at 100°F.

Conroe's Influence

The shock of discovering such a valuable reservoir with such different structural conditions (Conroe's type remains undetermined), along a shoreline or contact hitherto more or less avoided, has been great. It has given rise to correlations incapable of correlation, so the geologists say, and if the so-called Conroe "trend" leasing play is not sired by Conroe, Conroe has certainly been no deterrent to the play.

Shortly after the field was discovered the "trend" was hesitantly referred to as the alibi for taking acreage as much as eight or 10 miles away. The effectiveness of the phrase spread, leasing along the "trend" passing into counties other than Montgomery. The "trend" evolved from the alibi class to the reason class.

Dr. Donald Barton, discussing the Conroe "trend" and causes which motivate actions of oil men, attributes not a small amount of the Conroe trend play to the fact that it brings virgin acreage before the prospector's eyes, a thing which has seduced him since the days of Colonel Drake. The momentum the play has gained he contributes partly to the sheepishness of oil men.

The Westward Trend

The best way to trace the path of the Conroe trend westward is to follow the Lagarto-Reynosa outcrop west and south paralleling the Gulf shore down to Live Oak County. Then trace below it and broadly parallel to it the Reynosa-Lissie. In this path will be found Hockley, Raccoon Bend, Garwood, Pettus, Mount Lucas, Three Rivers, and a number of prospects. That the Conroe sand is Cockfield, which has been found productive in the more southerly fields Hull, Humble, Pettus and Mount Lucas, all of which produce above 40 gravity oil, is another fact which has given impetus to the leasing in this direction.

The play has received the backing of exploratory drilling in southwestern Montgomery County and in northern Harris County. Wildcats have been drilled and abandoned in the vicinity of Hufsmith, a Conroe trend play, but more are going down near the point where these two counties meet southwest of Conroe. Fort Bend and Wharton Counties although out of the belt described above, are infested with lease men who are Conroe trending in that direction.

East of Conroe, leasing has extended throughout the southern half of San Jacinto County and over into Polk County, where Dick Schwab's wildcat has found some high gravity oil. Old timers like Harrison and Abercrombie are in on the Polk County play. Newcomers in the Gulf Coast like Shell Petroleum Corporation are getting theirs too.

Further east into Tyler County, and within the belt, Houston Oil Company and Republic Production Company have found considerable gas in the neighborhood of Spurger. They believe there's oil there also.

In Louisiana

Hardly a week has passed since Conroe's importance became realized without items appearing in newspapers and trade papers concerning the wholesale taking of leases in Louisiana. True that thousands of acres in Louisiana have been picked up with small outlay of capital, but these thousands remained untaken until Conroe came to light.

The Lafayette

The Reynosa in Texas corresponds to the Lafayette in Louisiana. Much of the Louisiana leasing has taken place in the Lafayette belt. An accurate definition of this belt is impossible, due to insufficient geologizing and to depository actions of the Mississippi river.

Roughly it may be followed across the state, starting at the western boundary and going eastward, as follows:

The first section lies in the southern part of Vernon Parish and in the northern half of Beauregard Parish. In Vernon Parish, towns along the northern border of the Lafayette are Caney, Leesville and Hicks. In Beauregard Parish, towns along the southern border are Fields, Seale, Camp Curtis and Longville.

Section second lies in the northern part of Allen Parish and the southern part of Rapides Parish. Towns along the northern border of the Lafayette in Rapides Parish are Gardner, Moreland and Lecomte. Towns along the southern border in Allen Parish are Handley and Wards.

Going further east, the Lafayette is found in the north and northwestern part of Evangeline Parish, embracing Beaver, Meridian and Turkey Creek.

It is unidentifiable on the surface throughout Avoyelles, St. Landry, Pointe Coupe and West Baton Rouge Parishes on account of the Mississippi river sediment.

Eastward it is picked up again, being bordered on the north by the north border of East Feliciana Parish and taking in the whole of the parish.

Continuing, with the exception of a narrow strip along the southern part, practically all of St. Helena Parish is Lafayette, the southern boundary being along the towns of Dennis Mills and Mount Pelier.

The northern part of Tangipahoa Parish is included in the Lafayette. Near here the formation runs up into southern Mississippi to cover the southern half of Pike and Amite Counties.

North St. Tammany Parish and all of Washington Parish fall in the belt. Towns along the southern border of the belt in St. Tammany Parish are Ramsay, Waldheim, and Talisheek.

In addition to Pike and Amite Counties in Mississippi, in which state the Lafayette is known as the Citronelle, the southern half of Walthall County and the southern parts of Marion and Lamar Counties are involved.

Going east, all except the southeast quarter of Pearl River County, Mississippi, is Citronelle. The southwestern half, (got by running a diagonal line from the northwest corner to the southeast corner), of Stone County is Citronelle, which continues over into Jackson County, etc.

Leasing

While leases in these parishes and counties east of the western boundary of Louisiana have not brought large per-acre prices, competitive bidding for some of the larger blocks has been rather keen.

One geophysical organization alone for the past year has kept three geophysical parties busy shooting central and coastal Louisiana and another shooting southern Mississippi. During this time the organization referred to has covered over two million acres in the Conroe trend of the basal Jackson. The organization has carried out extensive investigations in prospecting for new salt domes.

From all indications, the interest in these general areas of Louisiana and Mississippi is steadily increasing.

In the conservative words of the head of the organization doing the geophysical prospecting, "We look forward to more intensive explorations in the present year."

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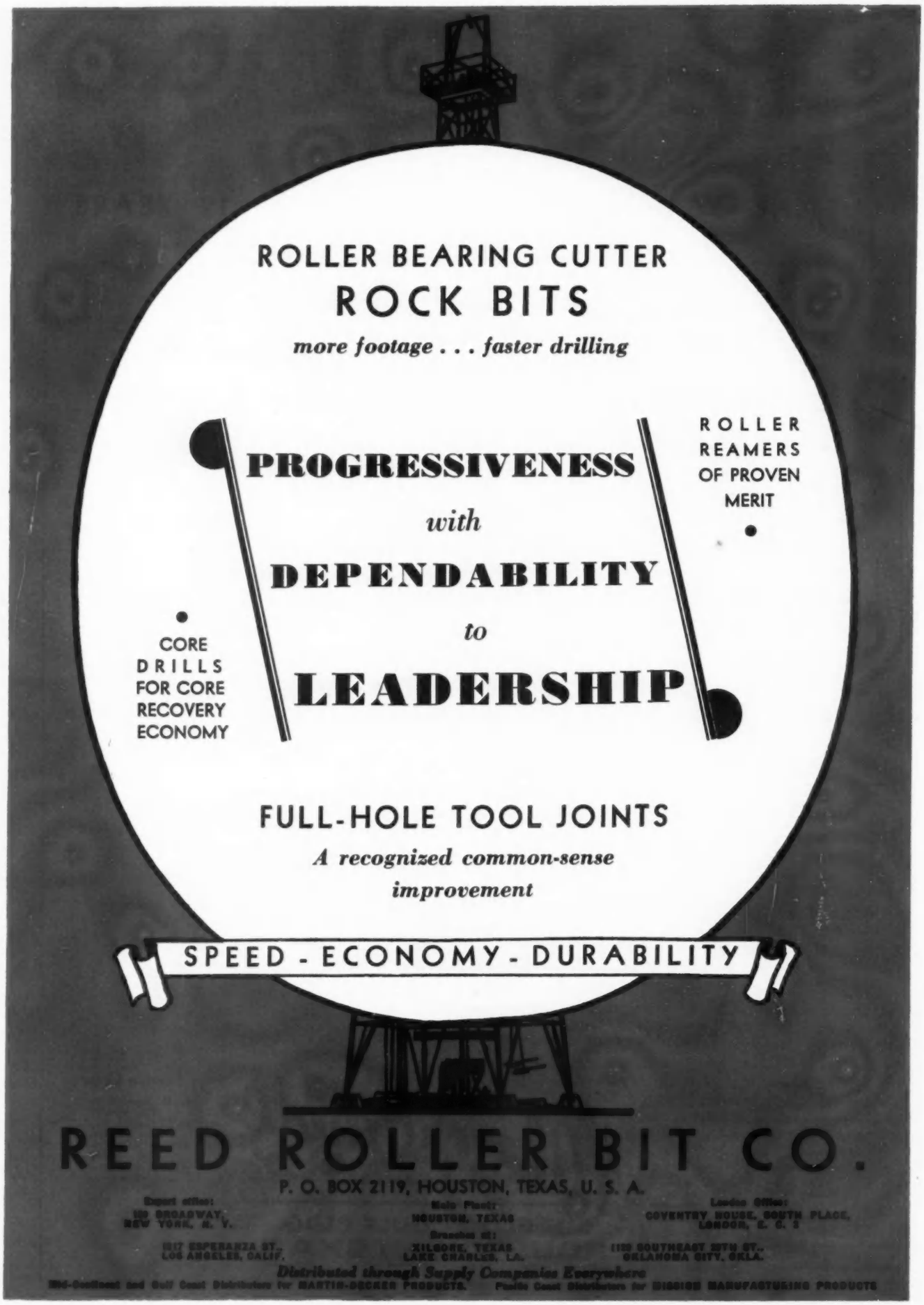
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Control of High Pressures in Gulf Coast Drilling

E. P. HUBBARD
Chief Engineer Production, Gulf Production Company

IT is only necessary to go back a very few years to recall the numerous "blow-outs" and fires experienced in the process of drilling up a "boom" field in the Gulf Coast area. At that time, most operators accepted these occurrences as a normal share of the hazards incident to the business. The industry began to take account of the great menace to human life, the waste of energy and pressure, the physical destruction of equipment, the delay in completion of wells, and began a search for ways and means to overcome these troubles. This resulted in improvements along two broad lines: first, an analysis of the fundamentals involved in drilling practice pointed the way to corrective measures put into effect by the operators; and, second, the cooperation of the manufacturers in designing and manufacturing equipment of adequate strength to withstand the conditions. How well the industry has succeeded is attested to by the relatively few troubles experienced in today's drilling program.

The first step in the analysis of pressure control is to arrive at some estimate of the pressures to be normally expected in the course of drilling the well. The pressure to be expected where water bearing formations are encountered would logically be based upon the hydrostatic head of a column of water equal to the depth at which the formation is encountered. Quite probably oil and gas formations in their original state were under similar pressures, but in some cases subsequent shifting in the internal structure of the earth resulted in mechanical compaction which increased the formation pressure beyond the normal hydrostatic head. In other cases, the original formation may be uplifted without compaction. Should its original water channels be interrupted and no new channels contacted, the formation would retain its original pressure. In the Gulf Coast area, the preponderance of production is derived from sands which ultimately connect with the surface, and from this source the formation derives its hydrostatic pressure. A column of pure water at 4° C. exerts a pressure of .4335 pounds per square inch for each foot in height. Sub-surface water may contain dissolved minerals in such quantities as to raise this pressure to .45 pounds per square inch. In order to counteract the tendencies of these formations to flow during the process of drilling, the mud should be of sufficient weight to overcome these formation pressures. A mud weighing nine pounds per gallon will suffice to overcome most normal fluid pressures, but wherever gas may be encountered, the mud weight should be increased to 9½ pounds. This should be sufficient to counteract the reduction in effective pressure in the column of fluid due to aeration by infiltration of gas from the formation.

Drilling Mud Condition

During the progress of drilling an oil well, the proper conditioning of the drilling mud is one of the major factors leading to the successful completion of the well. The drilling fluid has three prime functions to perform, namely: to act as a carrying agent to remove the bit cuttings, to wall up the hole to prevent sloughing of the formations, and to overcome the flow of gases or liquids from the formations encountered. Velocity of flow, viscosity, and the colloidal characteristics of the mud are the more important characteristics as they affect carrying capacity. The importance of maintaining an adequate velocity of the mud stream is apparent. The viscosity of the fluid should be kept as low as is consistent without the presence of an excess of free water. The colloidal content of the mud fluid is one of the most important characteristics and affects all the functions involved. The colloidal property of mud is defined as the ability to "set" in a semi-solid mass, or jell, when not in motion. When set in motion by pumping, shaking, or otherwise agitating, the mass possesses considerable fluidity. This jelling property has considerable importance in improving the performance of a mud by holding cuttings in suspension when circulation has been suspended. This property also increases the mechanical strength of the film of mud deposited on the wall of the hole. In the Gulf Coast area, generally speaking, sufficient clay bearing formations are encountered to produce adequate volumes of drilling mud of good quality. The mud is produced by the cutting and churning action of the bit, together with the high-velocity jets of fluid from the slush pump. The quality of the mud is determined by the nature of the suspended clay particles; the sand and shale are inert and undesirable ingredients. In some fields, sufficient clay is not encountered, and it becomes necessary to transport the material from external sources.

When the quality of the clay available is poor, or when it becomes necessary to combat particular conditions, the addition of specially prepared materials may be resorted to in order to improve the performance of the mud. The colloidal properties in clay depend upon the amount of bentonite present. When the ingredient is lacking, or insufficient, the mud produced may have its colloidal characteristics improved by the addition of concentrated bentonites. There are a number of these products available commercially and have been successfully used in drilling practice. These compounds are known by various trade names, such as Aquagel, Gelite, Hydro-jell, Wyo-jel and various others too numerous to mention. The jelling effect and viscosity of the colloidal mud is controlled by the use of sodium tannate and caustic soda.

Quite frequently water flows are encountered in coarse sands or extremely porous formations. In order to prevent this infiltration, the wall of the hole may be built up by the use of a mud high in colloidal properties. This is accomplished due to the reduction in free water content and high mechanical strength inherent in such a mud. With a mud of poor colloidal characteristics, the free water will filter into the formation under the differential of pressure and leave the sand and shale on the face

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of the formation. This may form a cake or mud sheath of considerable thickness, but, because of its low strength, is easily dislodged. Due to the lack of free water in good colloidal mud, there is a minimum of infiltration with a resultant thin film of high strength. Of course, when voids or cavities are encountered, it may be necessary to resort to cementing to obtain a proper shut off. In this practice, the addition of about four per cent bentonite to the cement slurry will be of material assistance. Ordinarily the drilling fluid that suffices for the purposes outlined above will be of sufficient weight to overcome the pressures encountered in the formations drilled. Operators in the Gulf Coast realize more and more the importance of properly conditioned mud which will release the gas and increase the effective weight of the mud. Likewise, they appreciate the fact that a properly walled hole will seal water bearing formations and reduce the infiltration of water with its resultant thinning and weight reduction. If properly conditioned mud will not suffice to overcome the pressures encountered, the weight may be increased by the addition of materials of higher density than found in drilling mud clays. The most common materials used for this purpose are compounds such as iron oxide, barium sulphates, amorphous silica, etc. These materials are available at various supply stores and mud companies under various trade names.

Care should be exercised in the addition of these materials to mud in the hole to prevent too rapid unbalancing of the fluid columns. Since these materials are considerably heavier than the ordinary sand, shale, and clay carried in suspension, there is a greater tendency to precipitation. To counteract this property, the colloidal characteristics of the mud should be properly maintained. Some of the compounds include bentonites to provide for this contingency. It must be borne in mind that this increased weight in the mud reduces the capacity of the fluid to remove cuttings from the hole. By the addition of weighting materials, the mud weight may be increased to 15 or 16 pounds per gallon, but this weight is rarely needed and not recommended except in extreme cases. Mud in excess of 12½ pounds per gallon is very difficult to handle and precipitation is quite likely should circulation be interrupted. This might result in seizing the drill pipe. When drilling fluid under 12½ pounds per gallon will not suffice to overcome the pressures encountered, it is probably best to resort to a stuffing-box for the drill stem and chokes on the mud outlet to control the pressures. In this case, while drilling, the mud should be reduced in weight in order to provide additional carrying capacity and to reduce the tendency to gas cut.

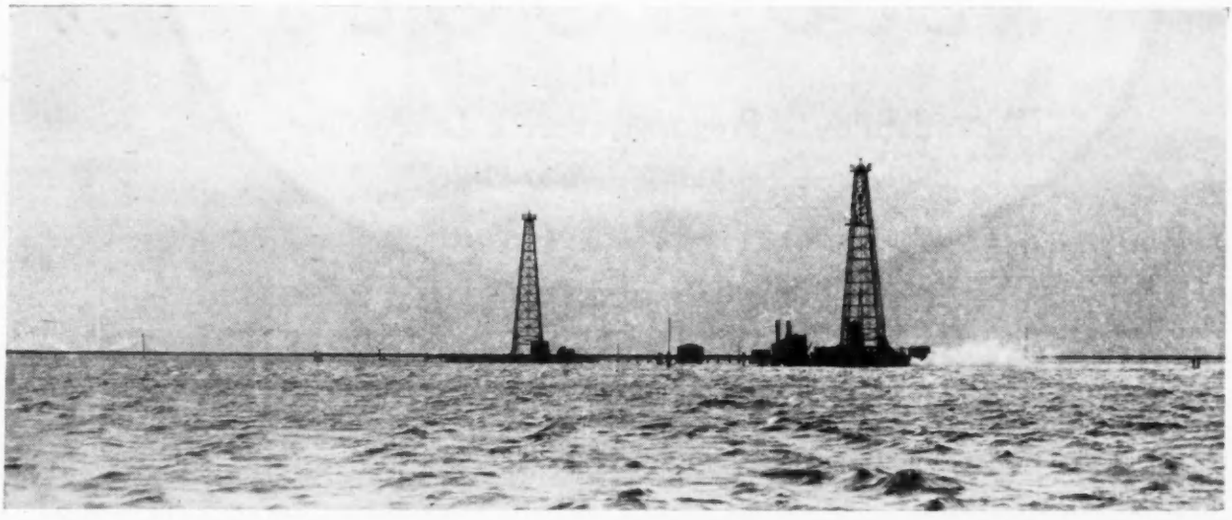
When coming out of the hole, the light mud should be displaced by heavy mud with circulation maintained as much as possible by "swiveling" out. When going into the hole, of course, the reverse of this procedure should be employed.

In all cases where high pressures are being combatted adequate circulation should be maintained to prevent gas pocketing and to insure a uniform distribution of properly conditioned mud. The study of mud control and its application to the drilling of oil wells is hardly out of the experimental stage and every day chemists and trained oil men are adding to their store of knowledge in an intensive study of this highly important phase of drilling oil wells in high pressure areas.

Blowout Preventers

Whenever high pressure formations are unexpectedly encountered and sufficient time is not available to control these pressures by mud conditioning, the driller must rely on his old friend, the "blow-out preventer." The original blow-out preventer consisted of a long nipple of drill pipe with a lead faced seal above the lower tool joint pin. This seal, when lowered into the companion bowl on the casing head, forms a pressure tight union between casing and drill pipe by virtue of the weight of the pipe. When necessary, this pressure could be increased by the use of turnbuckles. By compounding pumps for higher pressure, lubrication, etc., heavy mud could be introduced into the drill stem and the discharge could be regulated by chokes and valves on the casing head. These original "boll-weevils" have been developed until today we have two main types: the Ram type which forces a specially prepared packer around the drill stem, and the Bowl type in which a packing assembly latches around the pipe and is lowered into a bowl. The latter type has several minor variations but are based on the essentials of the Hosmer patents.

Quite frequently both preventers are installed on the surface casing. The bowl type preventer requires the manual operation of placing the packing assembly around the drill pipe and lowering the whole into place. The ram type has the packing in the body of the preventer but withdrawn from the pipe when not in use. Provisions are made for remote control by hand in some models while in other models the rams may be closed by pressure. The latter model is used extensively and generally so manifolded as to permit the use of steam, water, or mud pressure as the operating agent. Actual field experience has demonstrated that a minimum pressure of 350 pounds per square inch applied to the pistons of the rams is required to insure a positive seal when the packing is in good



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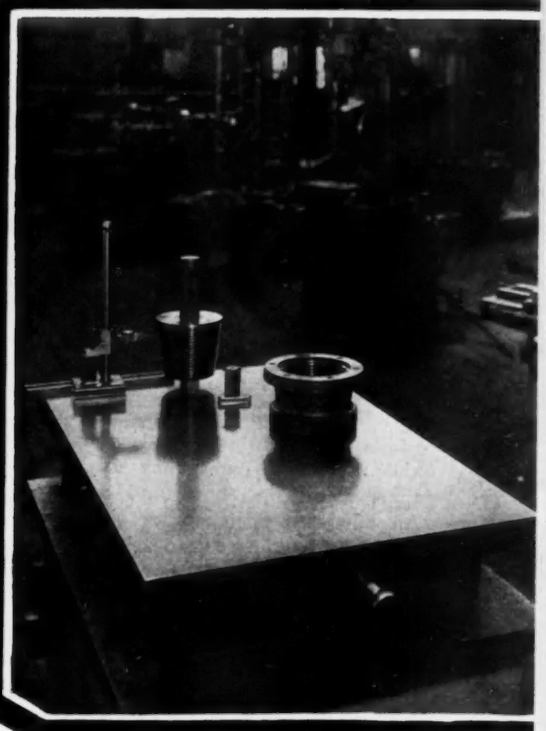

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operating condition. For this reason, some companies operate a spare boiler feed pump with a fluid pressure capacity of over 400 pounds per square inch to supply this pressure when conditions indicate that the use of the preventer might be required. The blow-out preventer is generally installed immediately after setting surface casing on all wildcat wells and certainly prior to encountering any known high pressure formation in fields where conditions and markers are better known.

Precautions

There are certain precautions which every operator should observe during the progress of drilling. The hole should be kept filled with mud at all times; particular attention to this feature is necessary when removing drill pipe from the hole. The mud should be weighed frequently if an automatic weight recording device is not employed; visual observation can not be trusted to determine this feature on account of the deceptive appearance when gas cut. Periodic tests should be made to determine if the mud is kept properly conditioned. Precaution should be used to pull out of the hole slowly when the pipe approaches the size of the hole being drilled; otherwise there is likelihood of a swabbing effect and the displacement of a considerable head of drilling fluid. When drilling in high pressure formations, particularly in shale, it is desirable to maintain as large size hole as possible to minimize these hazards. The danger of mechanical rupture of the wall of the hole by contact with the drill pipe is also minimized. While the advantages of "rat-holing" ahead for the pay formation is appreciated, it is advisable to ream to full size as often as practicable. The pumps and compounding manifolds should be maintained in good condition and ready for emergency use. Many operators keep a spare stand pipe, hose, and swivel ready for emergencies. An adequate air chamber will reduce the surging effect produced by the reciprocating motion of the slush pumps.

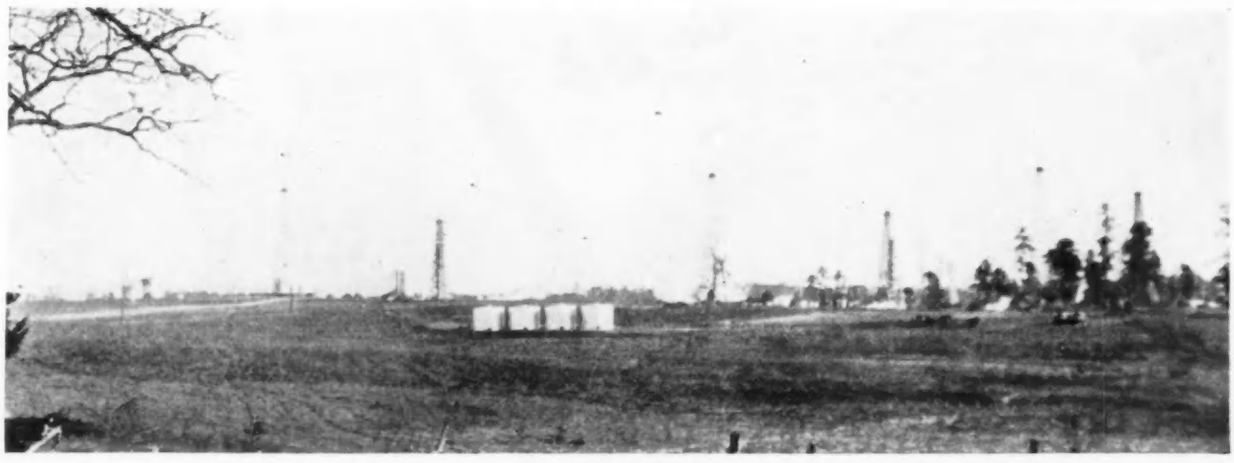
Setting Screen

Prior to the setting of casing or screen, it is essential that the mud be in good condition and properly circulated for a sufficient length of time to insure the uninterrupted progress of the setting job. Two methods of setting screen will be briefly described here. One method is to set the screen in place with the drill pipe and wash the outside of the screen thoroughly with clean water. This done, the screen is sealed to the casing and, by means of the special tool employed, the drill stem is released from the screen and seal. Mud is recirculated until the fresh water is displaced, at which time the drill stem is removed. The flow string, generally 2½-inch tubing, is then run inside the screen and the Christmas tree installed. The inside of the screen is then washed and the mud displaced in the casing to the point where the formation pressure has sufficient pressure differential to permit the well to "come in." In the second method, the screen is landed with the flow string, generally 2½-inch tubing as in the first case. The Christmas tree is connected and the screen washed outside. The washing is continued until the well is thoroughly washed. The pipe is then rotated to expand the sealing device and seal the liner to the wall of the casing. The tubing is then free from the liner and may be lowered a few inches to a leaded seal which permits a seal between the liner and the tubing. The well is now completed, and if the differential pressure of the formation is sufficient, the well should "come in." There are advantages and disadvantages to both methods. The prime advantage of the first method is to be able to locate the flow string near the bottom of the screen. The prime advantages of the second method are the setting of the screen, and washing completely in one operation with the Christmas tree connected throughout the latter operation.

The mechanical design of Christmas trees has been materially improved. The major reason for this has been in the reduction in size. Present day hook-ups are made up of three-inch and 2½-inch fittings and valves, as compared to the six-inch and 4½-inch trees formerly used. Naturally, the control of high pressures is made much easier, particularly as applied to valves. The reduction in weight contributes to the ease in handling—a matter of importance in the control of the well during the hurried moments of completion. The improvements in materials and design have had their effect in giving equal pressure control with less bulk and weight.

The present day practice of bringing in wells with restricted flow has undoubtedly reduced the cutting out of strainers with its attendant sand troubles which resulted in the cutting out of valves, fittings and chokes which caused many wells to get out of control. The day has passed for the "showman" operator who permitted his wells to flow over the crown. Most of the spectacle connected with the completion of wells in the "good old days" has passed, and today it is as it should be—a well organized orderly business. All of the problems are not yet solved, the hazards may never be eliminated, but the industry will continue to devote its efforts to improving the methods for the control of high pressure wells.

I firmly believe that the greatest improvement in drilling and production technique, not only for the purpose of handling high gas pressures, but also for the purpose of economy in carrying on normal rotary drilling operations, will come from further study of the chemical characteristics of the drilling fluid, which, after all, is the fundamental and primary theory on which rotary drilling is based.



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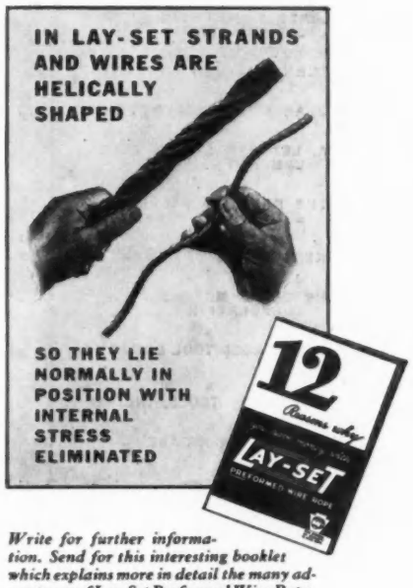
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Some Operating Problems *of the* Coastal Salt Dome Fields

R. G. GRAY
Petroleum Engineer
Rio Bravo Oil Company

TO one whose experiences have been limited to other types of oil fields the Texas-Louisiana Salt Dome fields present many unique development and operating conditions. These conditions and their attendant problems are fully understood only by those with considerable experience in coastal operations.

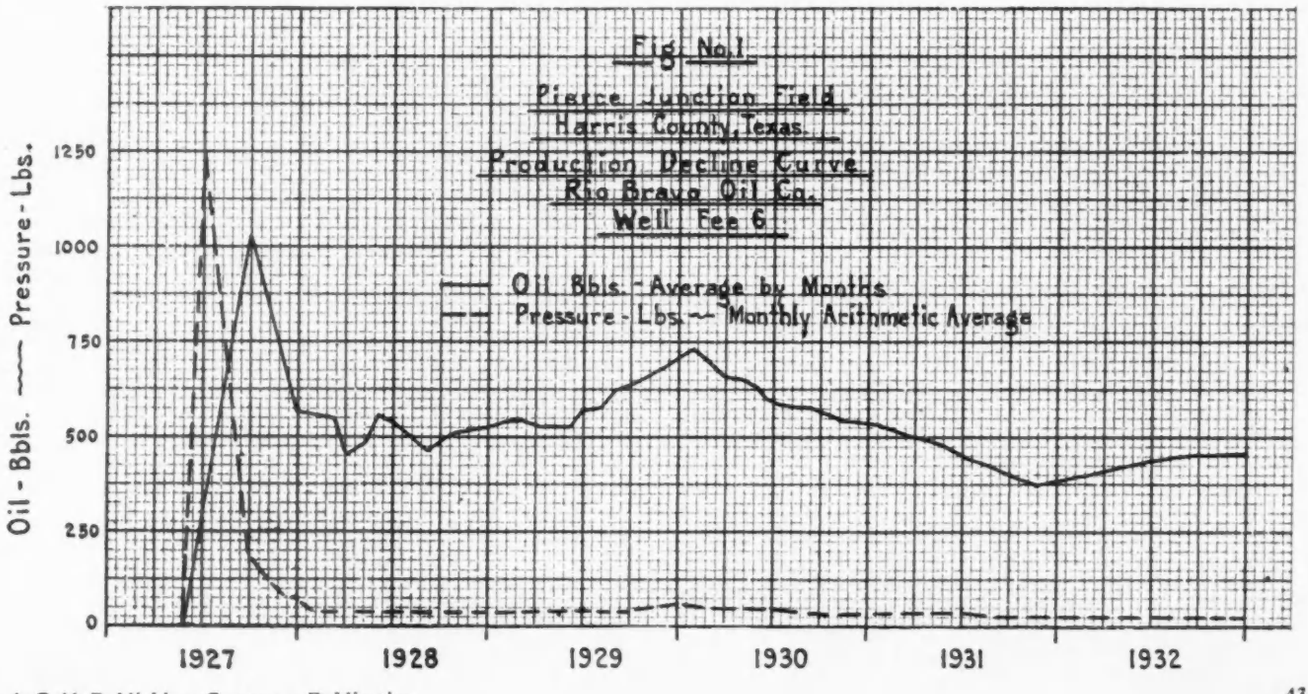
Coastal operators, many times during the past few years (under proration), have made assertions that did not appear to others, unfamiliar with conditions, as being based on sound engineering principles, and, despite the evidence presented to back the assertions, these other operators have consistently refused to believe that operating conditions in the salt dome area differ materially from those found in other producing districts. It has been difficult for operators unfamiliar with salt dome problems to understand that all general rules applicable to the production of oil from fields within the scope of their knowledge could not likewise be applied to salt dome fields. Of course there have been some rather rash statements made, unattended by reliable proof. For example, it has been said by some that under no conditions could any flowing well on a salt dome be pinched back beyond the point at which it was then producing without causing irreparable damage to the well. Such broad conclusions as these strike even the seasoned salt dome operator as being unreasonable. However, the records show us that there are some very sound reasons for such beliefs and that these operators have come to their conclusions honestly. Many of them have found through their experiences in the extreme choking back of wells that damage has been occasioned in the majority of cases, and consequently they hesitate to experiment further with a practice which has in the past caused so much grief.

No Two the Same

In no two salt dome fields are structural conditions exactly the same. Radial and peripheral faulting add complications within the fields themselves. Sand conditions vary so markedly from field to field, and from locality to locality within the same field that it might be said that with the exception of fields of the deep seated salt dome class, such as Sugarland and Rabb Ridge, where sand conditions are more or less uniform, every well drilled in a producing field is virtually a wildcat. In some fields offset wells cannot be correlated. Sands pinch out and come back in without apparent rhyme or reason. Wells set in the same sands will produce different gravities of oil. Offset wells completed at very nearly the same time and under practically the same conditions will vary widely in total recovery.

Sand conditions in the different fields call for varying spacing programs. The close spacing of wells on the east side of the Barbers Hill field has resulted in an extremely low average per well recovery and yet on the southwest flank of the Spindle Top dome, where wells were spaced even more closely, unusual per well recoveries have been recorded. It has been estimated that the total recovery from the average well in the congested area on the east side of the Barbers Hill dome will be less than 100,000 barrels, while to the writer's knowledge, on a typical small lease located on the southwest flank at Spindle Top, on which 15 producing wells were drilled, the average per well recovery will be approximately 330,000 barrels.

The pinching back or choking of wells was first prac-



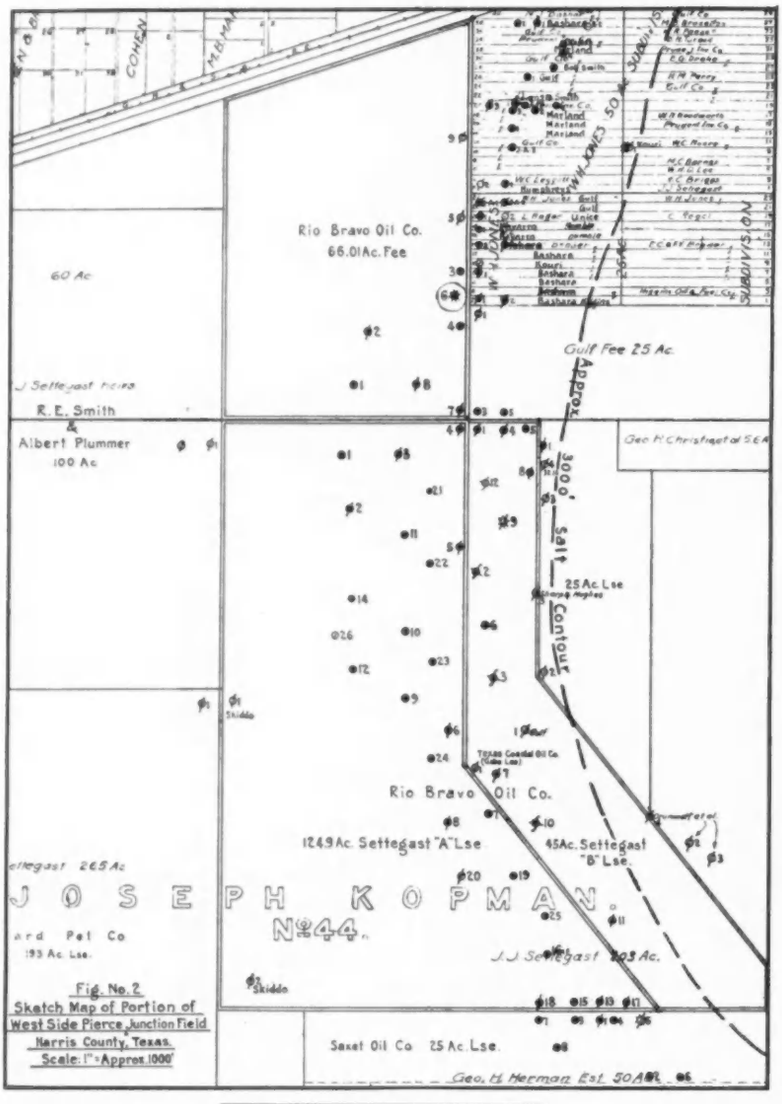


Fig. No. 2
Sketch Map of Portion of West Side Pierce Junction Field Harris County, Texas.
Scale: 1" = Approx. 1000'

ticed in the salt dome fields. Years before the idea of the common ownership of oil pools had been born, long before such terms as conservation, proration, market demand, ratable production, oil-gas ratios, etc., had become a part of the oil man's vocabulary, and while fields in other parts of the country were still being produced to capacity, operators in the coastal area were restricting the flow of oil from their wells. For what purpose?

Why Wells are Pinched

First: Because of sand conditions. These operators had learned in the hard school of experience that unrestricted flow caused a too rapid migration to and through the screen of loose sharp sand. This resulted in the cutting out of the screen, sanding up of wells, in a good many instances the cutting out of flow connections, and in some cases loss of wells.

Second: To control water. It was found that unrestricted flow hastened the intrusion of water and resulted in shorter flowing life of a well. Early intrusion of water increased production and treating costs.

Third: Conservation of gas energy, which had long been recognized as the principal expulsive force.

Experience has taught the salt dome operator that the manner of completing wells, size mesh of screen to be used, rate of flow, etc., depends entirely upon the conditions as he finds them in the particular well that he is completing. Individual wells present their own peculiar problems and no rule of thumb can be applied to wells in the same sand, on the same lease or wells in the salt dome area generally. Sand texture, sand thickness, gas volume, pressure, initial water production, fluid volume and other variable factors are taken into consideration. These factors (or rather their combination) vary from well to well.

After a flowing well has cleaned itself it is gradually pinched back to a point where all factors being considered have been balanced one against the other. This is necessarily a point at which a steady even flow can be maintained, and a point at which only an experienced salt dome operator can arrive with continued success. A substantial change in this rate of flow in nearly every case results in an unbalanced flow. A slight opening or closing of the well may result in an increase in gas volume. Experience has shown that if the well is making a considerable amount of water, any substantial increase in the size of choke may cause the well to go completely to water and a substantial decrease in size of choke may "load the well up" beyond its capacity to flow. In the case of a well flowing with little pressure and small volume of gas, a change of choke in either direction may cause the well to cease flowing. The unusual performance of salt dome wells flowing under low pressures and low gas volumes can be illustrated by the production curve of the Rio Bravo Oil Company's Fee 6 well in the Pierce Junction field, which is shown in Figure 1. To attempt to change the rate of flow from a well of this sort would be extremely unwise.

It is generally believed from experience gathered over a number of years that the recovery of the maximum amount of oil from any given salt dome sand depends to a large degree upon proper completion of wells and proper control of initial rates of flow.

It is generally believed from experience gathered over a number of years that the recovery of the maximum amount of oil from any given salt dome sand depends to a large degree upon proper completion of wells and proper control of initial rates of flow.

In deep seated salt dome fields, commonly referred to as the non-piercement type of dome, where sand conditions are uniform and are found in a more or less blanket condition, the extreme choking back of flowing wells can be accomplished with more success than in the piercement type field. Fields of the non-piercement type are in the minority. Even in this kind of field rules which can be successfully followed in the production of oil from one field cannot necessarily be applied to all other fields of the same type.

Unusual and little understood sand conditions on the piercement type of dome, and on deeper seated domes where production is obtained from sands of a lenticular nature overlying the dome, present some very interesting problems both from geological and production standpoints. Good wells are often obtained in areas completely surrounded by mediocre wells or wells that have tested dry in sands from which these good producing wells were later completed. Likewise, good producing wells are often completed in areas where sands are thought to have been completely drained. A typical illustration of such conditions can be found by referring to the sketch map of the west

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side of the Pierce Junction field shown in Figure 2. Rio Bravo Oil Company's Fee 6 was completed June 1, 1927. The well had an initial daily production of 30 million cubic feet of gas and about 50 barrels of oil on three-quarter-inch choke, 1245 pounds pressure. As the gas volume decreased the daily production of oil increased, reaching a peak of 1000 barrels during September, 1927. This well had produced a total of 1,086,947 barrels of oil to February 1, 1933, and is still flowing at the rate of 450 barrels of pipe line oil daily on a three-quarter-inch choke; 25 pounds pressure. This well is surrounded by a group of wells drilled deeper than Fee 6, but none of which encountered the sand from which this well produces.

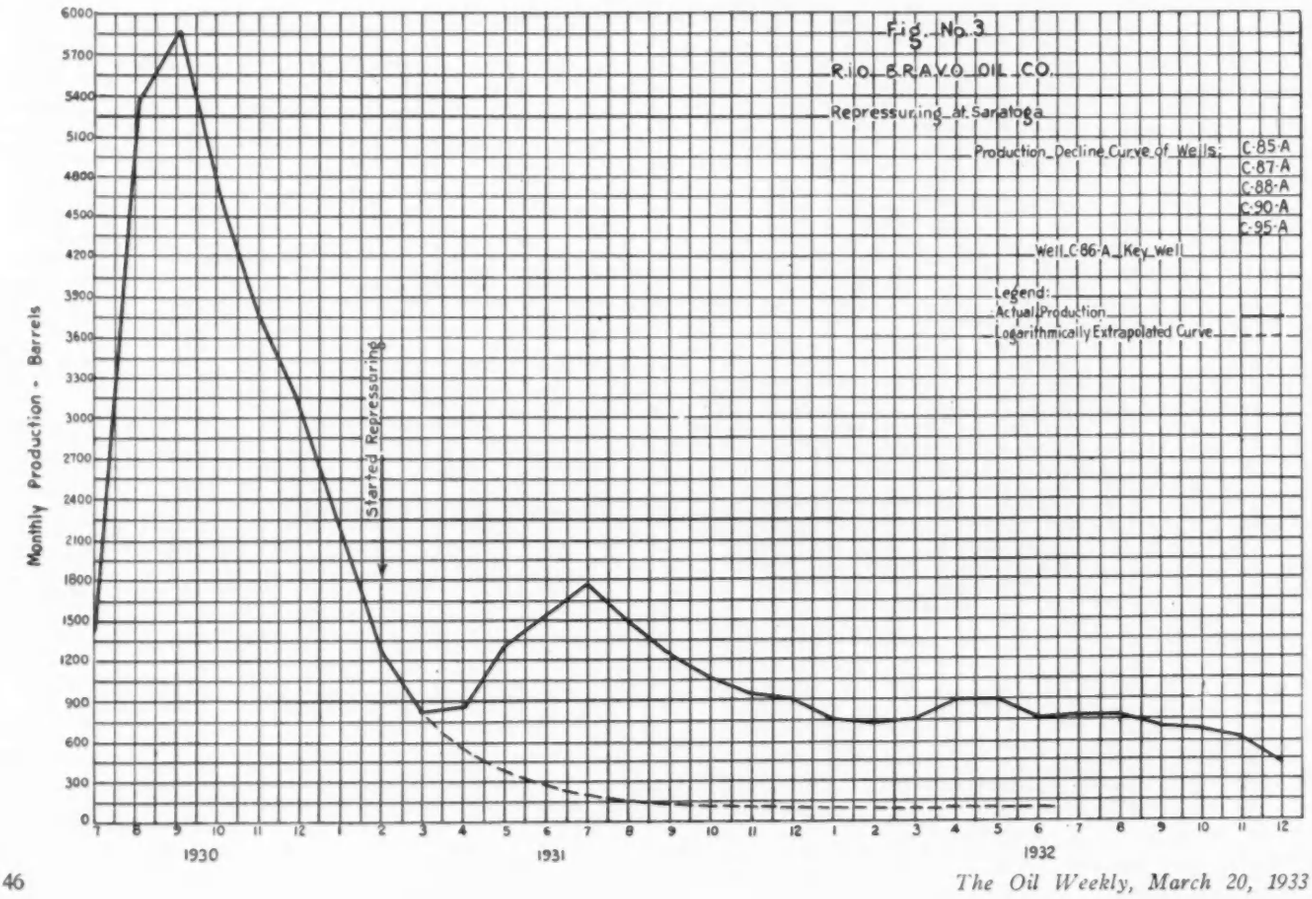
Pumping Wells

About 50 per cent of the oil produced in the salt dome area at this time is coming from the older fields. A large amount of this oil is being produced from lenticular sands overlying domes or from semi-flank sands of a more or less lenticular nature. To produce oil from these older fields at a profit the Gulf Coast operator must solve some real problems. Unlike the operation of small producers or stripper wells in other fields, the operation of small pumping wells in the Gulf Coast is extremely expensive. Loose sand and acid water conditions result in excessive wear of pumping equipment and necessitate constant pulling of wells. Operators must keep careful check at all times on material costs, and pulling and pumping expenses, and these costs must be accurately allocated to the well to which they are chargeable. Through a check of this sort it often proves advisable to abandon wells which have the appearance on the surface of being paying wells. Through the abandonment of non-paying wells of this sort operators have been able to cut labor costs as much as 75 per cent and total operating costs from 50 per cent to 75 per cent.

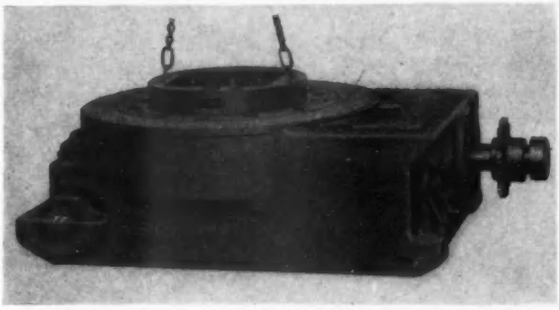
Repressuring of lenticular sands overlying the salt has been practiced with good results. Where lenses of fairly loose sands can be accurately correlated and are found to exist over appreciable areas (10 acres or more), repressuring can be carried on at a profit. A few years ago a search for new shallow producing sands resulted in the discovery on Rio Bravo Oil Company's Cotton tract at Saratoga of a distinct sand and sandy shale horizon at a depth of about 500 feet. Through logs of old well it was possible to trace this horizon over an area of about 20 acres. Several good wells were completed in this sand and conditions being favorable, it was decided to experiment with repressuring.

A complete compressor installation was put in at a cost of $2300.00. A gas collecting system from the old producing wells was already in use. Key wells situated high structurally on the lease proved unsatisfactory, the best results being obtained from key wells situated structurally low, at about the oil-water contact. At the start of the experiment about 8000 cubic feet of gas per day was injected into the sand. No gas was purchased. As the experiment progressed the amount of available gas was gradually built up to 100,000 cubic feet daily. Of this amount of gas approximately 75,000 cubic feet is now being injected into the sand. As a result of increase in available gas an additional compressor installation was put in and a second key well hooked up. This second installation was put in at a cost of about $1800. Gas is being injected into one key well at 30 pounds pressure and the other at 50 pounds. Pressure on the gas collecting system varies from four to seven pounds.

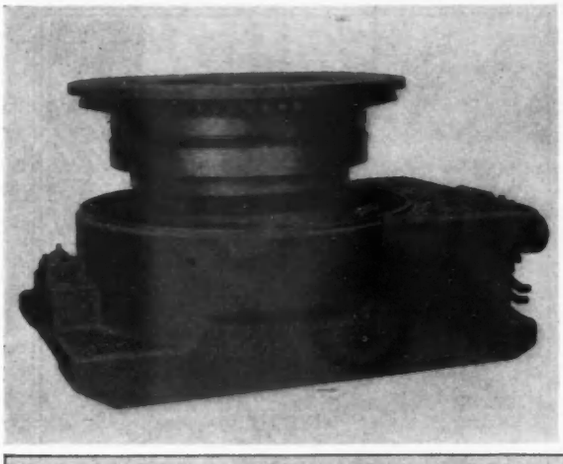
This repressuring is being carried on without additional labor at a total cost of $3.44 per day. A comparison of production curves of wells which produced from the 500-foot sand prior to repressuring of the sand and the curves of wells completed since repressuring was started indicates beyond all doubt that the experiment is a success. Results to January 1, 1933, of this repressuring are shown in graphic form in Figure 3.



Showing the IDEAL FE-20½" Universal Rotary in make-up position.



Spider elevated preparatory to changing from drilling to make-up position.



Showing gear table assembly, including main bearing and hold-down bearing.

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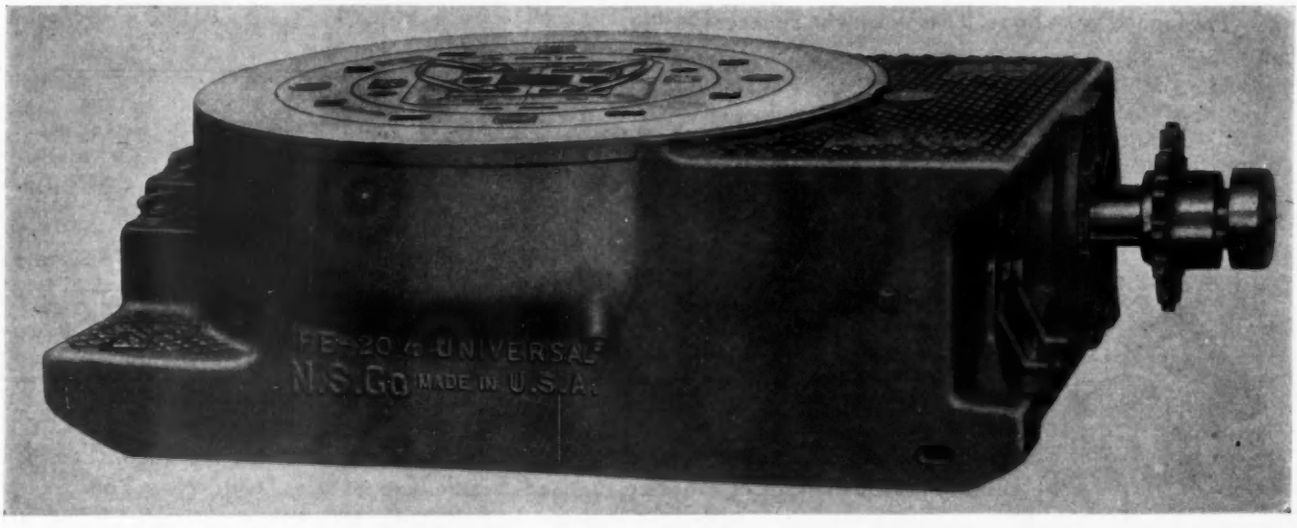

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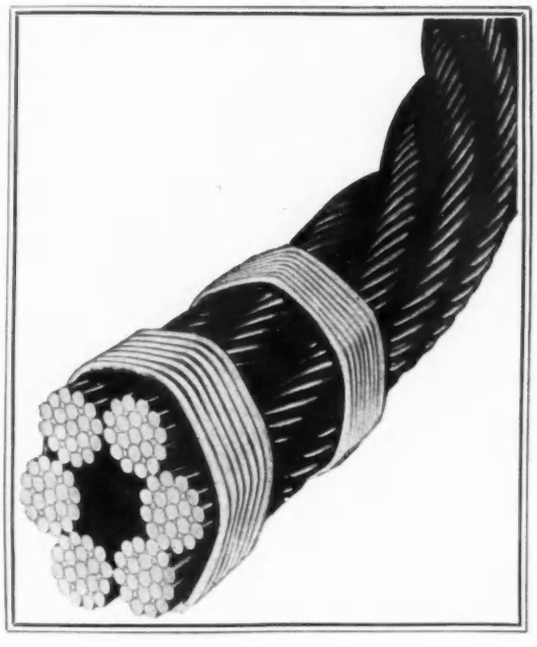

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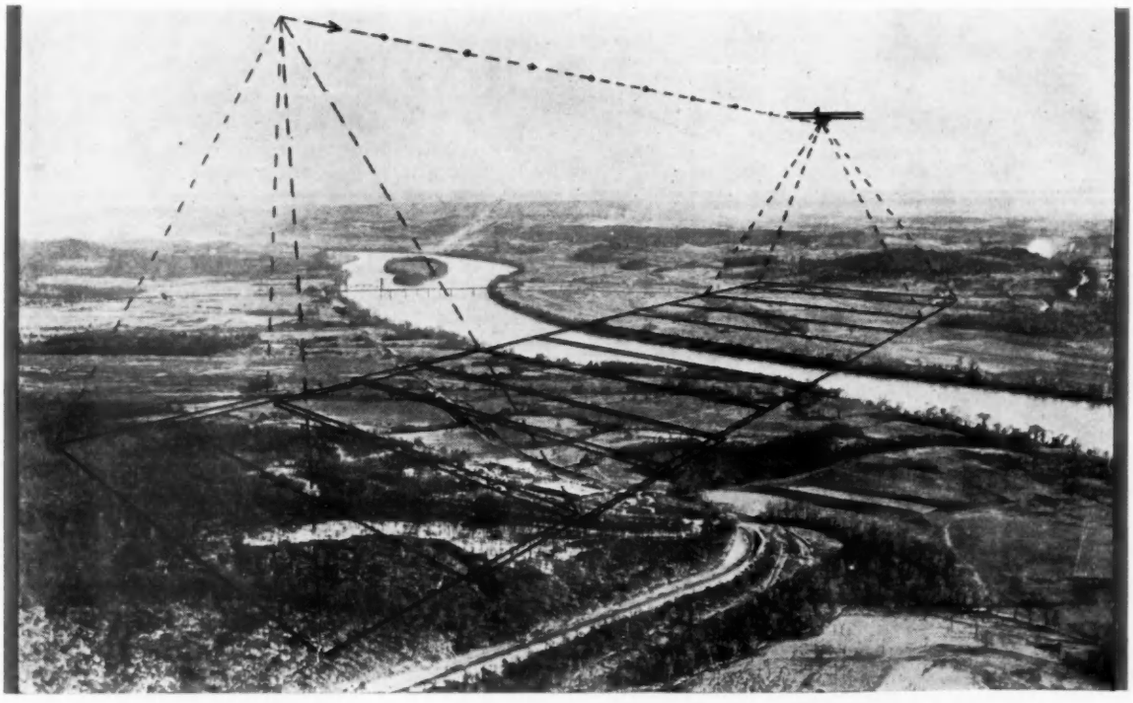

How aerial photographs overlap to make a continuous picture of the area mapped.

Controlled Aerial Mapping *in the* GULF COAST

JAMES ATKINSON
Edgar Tobin Aerial Surveys

CONTROLLED photographic mapping has taken a prominent part in the successful oil development of the Gulf Coast. Five years ago the method of composing maps from aerial pictures of the land was considered novel and untried, though offering tremendous promise. It found quick adoption among several major companies with extensive programs planned in the Gulf Coast. They recognized it as the only feasible solution to the monumental problem of getting detailed land surface information rapidly enough and at a conscionable cost.

Even in their early undeveloped stage aerial mosaic maps proved themselves of great value in exploration work. They were then limited, however, to a relatively narrow range of use; methods for building them to control were yet to be devised, and the mosaics lacked engineering accuracy as maps.

The story of aerial mapping in the Gulf Coast during these past five years is one of rapid advance and expansion. To put it briefly, this method has so established its value in every phase of oil exploration, that up to the present time practically the entire Gulf Coast area has been mapped by it, at the demand of the oil industry. During this period aerial mapping has progressed from the level of pioneering and experiment to a point where it may properly be called a science. The maps available to the industry today on the Gulf Coast are not only composite photographs of the land surface areas; they offer the benefits of the adaption of modern engineering methods to their construction, and accordingly adhere to high mapping standards. This has been brought about by building them in quadrangles on a geodetically-tied polyconic projection, by means of engineering control.

The elements of accuracy in these photographic maps enables them to meet exacting engineering requirements, whether for local or regional purposes. As a result, their range of application has widened to an extent where they are employed in practically every division of oil exploration and production.

In any organized search for oil the idea of course is to locate, in the shortest possible time, geologically verified sites for production, and to secure by lease or otherwise the right to exploit them. Since the problems are chiefly concerned with land, mapping naturally takes an indispensable part; and success is appreciably dependent on the quality of the maps used. In the Gulf Coast, ordinary problems of exploration and leasing are magnified by complex geology and confused property records. Also, aggressive competition in every likely part of the area puts a high premium on time. Controlled photographic maps have been outstandingly valuable to the oil companies because, where other mapping has fallen short, they have succeeded in organizing and accelerating every department of action needed to meet these conditions. As a result they have increased production profits by saving time, and preventing wasted effort and expense.

Geological Work

In geological work aerial maps are invaluable as a source of interpretative information. Structure indications have often been found by close study. The geologist is enabled to single out the likely areas and concentrate his field work on them. In the field the aerial map serves as a guide map by means of which a geologist can determine the best routes for cross-country movement and keep himself constantly located. It is used also as a base map for setting down geological information as found in each particular area by field work,

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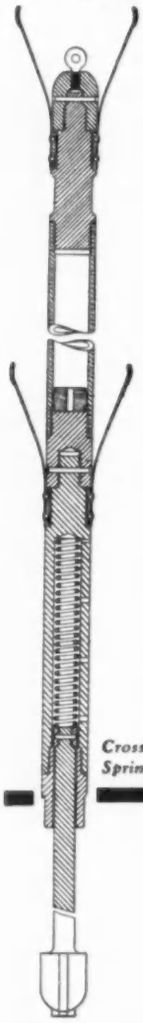

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Cross section view of "Go-Devil", Spring Shock Absorber Type.

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and correlating it with information similarly obtained in other areas, whether close together or remote. The permanent geological maps are quickly made from these field photographs. In sub-surface work, well locations are precisely identified with relation to land lines by the photographic detail; the local and regional accuracy of the maps has made sub-surface correlations over large areas practical.

Geophysical Exploration

In geophysical exploration the most efficient set-up of stations under any of the methods is worked out in detail without visiting the locality. In the field the aerial map permits the chief-of-party to execute the movements of his crew without waste of time. He determines his inter-station distances by the simple process of scaling on the photograph.

In working up the field data, the same aerial map used in the field serves as a base for plotting the geophysical picture and tying it accurately to the land. When the same area is explored by several methods—seismograph, torsion balance, magnetometer, etc.—the respective pictures, being true with the land surface, can be effectually correlated. As in geology, the field photographs are used for making the permanent geophysical maps.

Engineering and Lease Work

In engineering and lease work the photographic maps are considered indispensable because of their accuracy and comprehensiveness as a horizontally controlled base for constructing survey and ownership maps. Since they show the size, shape, and relation of property divisions as they actually lie on the ground, and all fences, roads, streams, and other natural and artificial property boundaries—all closed on horizontal control—the ever-present errors in the survey and deed records are quickly localized and easily adjusted to conform with true ground conditions. Vacancies and shortages are quickly exposed.

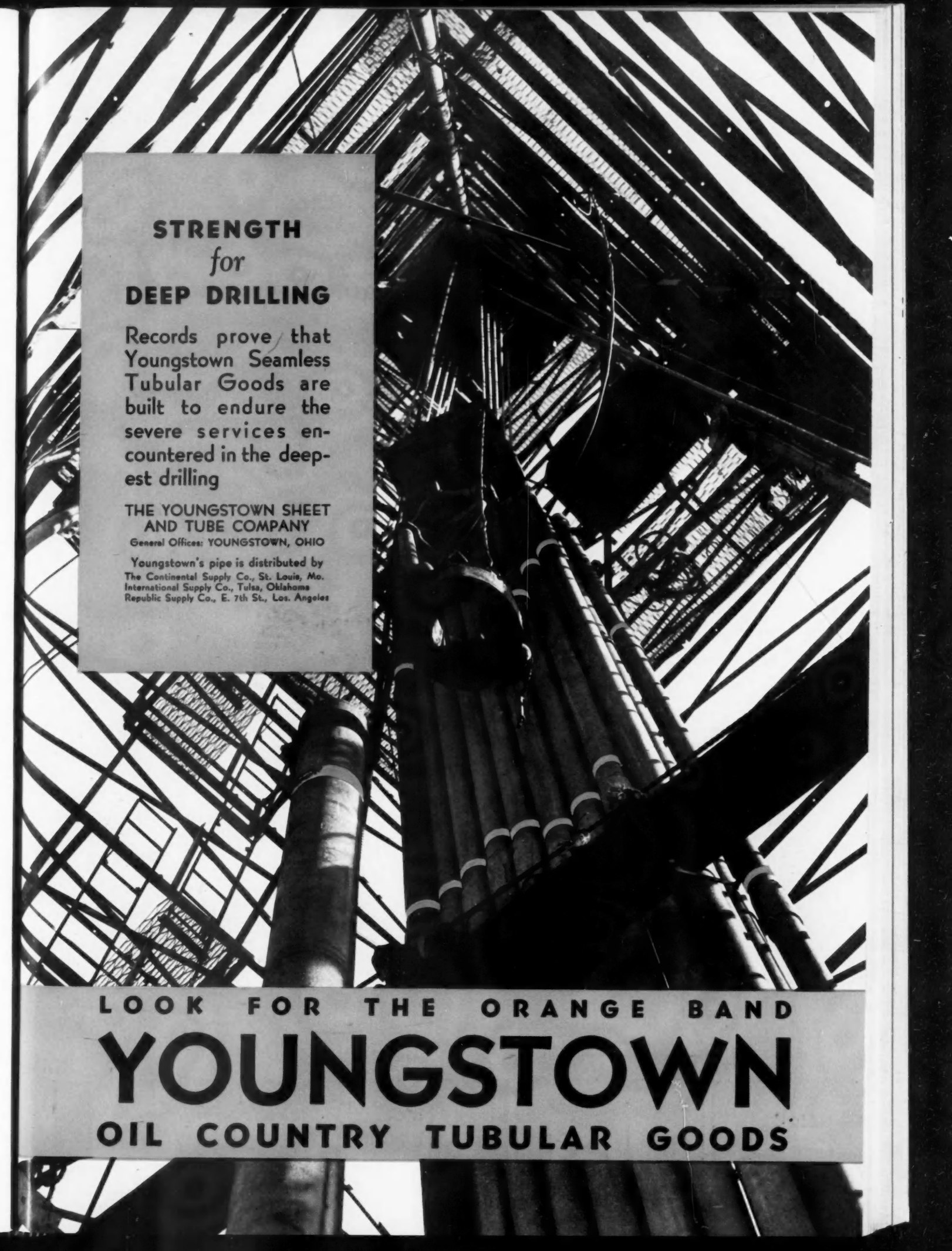
Because the photographic map system in the Gulf Coast is geodetically correct in any of its units, within one second of latitude and longitude, survey and ownership maps can be extended over any desired area, however large. The usual difficulty of tying property lines across country lines and streams is eliminated. Field engineering work for horizontal control is unnecessary. Acreage figures called for in the deeds are checked by planimeter measurements of the respective tracts on the face of the photographs. Stream patterns are exactly shown and hence enable the planimeter to follow true lines, instead of approximate ones plotted from costly meander traverses run on the ground.

Lease-Curing

In lease-curing, special, large-scale photographs give complete information as to occupancy, possession and other pertinent features on the tract involved. Physical evidence of ownership or title as shown on the photograph brings to light any disagreement with the deed as respect to boundary lines, corners, and acreage content. To definitely preclude the chance of expensive controversy over such disagreements, and to assure solidity in a block of acreage, a photograph of each tract, showing the boundaries and corners plainly designated, and certified in writing by the owner, is attached as part of each lease document. Photographs so certified are rated as unassailable evidence, and hence an effective legal bar to adverse claims subsequently arising from the lessor's source.

In developing proved areas the photographs are effective in meeting such problems as transportation, drainage, water-supply, and gathering. Used as a base for record purposes, they supply accurate, intelligent information to executives on current progress of development activity.

Experience shows that controlled photographic maps yield a profit over their cost in any single application in an oil company. The diversified use now made among many departments increases the total profit in proportion.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CONTINENTAL

Corrosion of Production Equipment in the Gulf Coast

STANLEY GILL
Consulting Engineer, Houston, Texas

IN connection with production operation in the Gulf Coast area, corrosion of well equipment constitutes one of the most serious items of trouble and expense. Surveys conducted by the American Petroleum Institute Sub-committee on Corrosion of Production Equipment[1] indicate that such corrosion is probably more widespread in the fields of the Gulf Coast than in any other producing area in the United States, not excepting the high sulfide fields of West Texas. Although individual fields or wells in all parts of the country give some trouble from corrosion, the percentage of corrosive fields and wells in the Gulf Coast is considerably higher than in any other area.

It is characteristic of all experience with corrosion of well equipment that exact classification of fields as corrosive or non-corrosive can seldom be made. Even in the worst fields, it will be found that equipment is only slightly attacked in a considerable percentage of the wells, while isolated wells in generally non-corrosive areas are frequently found to be highly corrosive. From a practical standpoint the operator is, however, interested in the general corrosive nature of a territory, and in his expectation of corrosion troubles. On this basis, at least half of the fields of the Gulf Coast are to be classified as corrosive, since rather serious troubles with corrosion of well equipment is experienced in a high proportion of the fields. In the other fields, some corrosive attack takes place, and occasional wells will be found to attack equipment very rapidly.

Of the Gulf Coast fields, the most generally corrosive are the old cap-rock producing areas, such as the shallow fields at Spindletop, Humble, Batson and Sour Lake. In these fields the water-oil ratio is very high, and the waters carry high concentrations of hydrogen sulfide. In general, severe corrosion of production equipment is to be expected in any Coastal field in which the well waters contain appreciable quantities of sulfide. However, freedom from hydrogen sulfide is by no means to be considered as indicating

[1]A. P. I. Production Bulletin No. 206, p. 130, December, 1930.

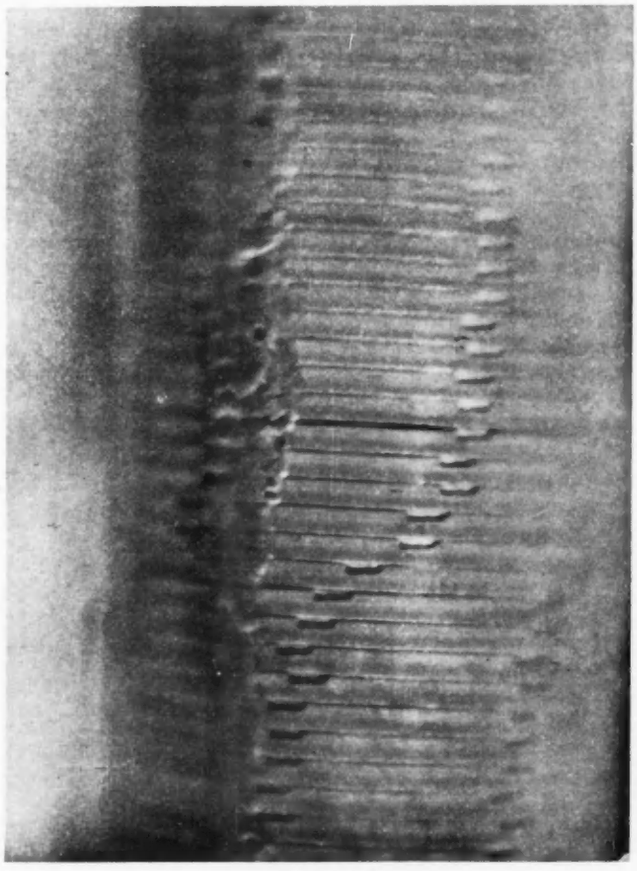

FIGURE 1-A

FIGURE 1-B

Typical corrosion failure of a brass wire-wrapped screen at Goose Creek. (a) Outside of screen, showing how wires have slipped, admitting sand to well; (b) Pipe with wire removed. The deep pitting of the pipe allowed the wire to slip by depriving it of support

FIGURE 2

Failure of screen in shallow cap rock field at Spindletop. One side of the pipe was completely corroded away.

freedom from corrosion, since some of the most severe corrosion of production equipment in the Coastal fields takes place in fields in which the waters contain no detectable quantity of hydrogen sulfide. Probably the most seriously corrosive of the Coastal fields is Goose Creek, in which the waters are, within the limits determinable by chemical analysis, entirely free from hydrogen sulfide. Other fields in which very severe corrosion of well equipment is caused by sulfide waters are Hull, Orange and West Columbia. In all of these fields, of course, there are many wells in which equipment is not attacked; but the number of cases in which trouble has been experienced in these and other fields is such as to classify non-sulfide, as well as sulfide, waters of the Gulf Coast as highly corrosive.

In the non-corrosive areas, it is generally true that little or no corrosion is experienced in the early years of the life of a field. This is due only partially to the relation of corrosion to water-oil ratio; since in some fields, such as Hull, a marked increase in corrosion experienced has taken place without any measurable change in water-oil ratio or character of well fluids. Usually, however, in Coastal fields where the waters do not carry hydrogen sulfide, no particular difficulty from corrosion of well equipment is to be expected before the fields are from four to seven years old, after which time increasing corrosion difficulties may be expected.

Corrosion of Well Screens

The most costly corrosion in Coastal wells is that which affects the well screens. The cost of such corrosion can scarcely be evaluated, since the major factors of loss of wells and sacrifice of ultimate recovery are indeterminable. A conservative estimate, covering a period of four years, and based upon a group of over 500 Gulf Coast wells, indicates that the cost of repair and loss of production during shut-downs occasioned by strainer corrosion aggregated not less than three to five cents per barrel of oil produced. The present average is probably considerably lower, since the group of wells used in this estimate included but little flush production. On the other hand, the estimate does not take into account the fact that in many cases wells are lost, due to the impossibility of making strainer repairs, or that the production of a well after the strainer has been repaired is seldom as great as it was before failure of the screen. Neither does it attempt to evaluate the loss of productivity which arises from clogging of the screen mesh by products of corrosion.

Two types of strainer corrosion are of particular importance in the Gulf Coast. Of these, the first is experienced in sulfide fields, and results in deposition, upon and within the screen mesh, of copper sulfide and other products of corrosion, which prevent or hinder the ingress of fluid. A similar effect is produced, in many of the Coastal fields, by deposition of calcium carbonate, which is apparently precipitated from the water, due to release of carbon dioxide as it enters the hole. Attempts have been made, over many years, to open up screens clogged in either of these ways by the use of acids, mechanical application of pressure and/or heat, and by the use of various forms of explosives. None of the past attempts have been particularly successful, but it appears probable that recently developed methods of cleaning with inhibited hydrochloric acid may be of considerable value in reducing the losses of production from such clogging.

More Serious Strainer Corrosion

A more serious form of strainer corrosion is that which results in destruction of the strainer metal, in opening the screen mesh, and in admitting sand to the wells. Due to the character of the Coastal sands, a very slight increase in the size of the mesh opening may allow sand to flow into the well; a very slight shifting of the wires of a screen may admit sufficient sand to sand up a well. This type of corrosion makes it necessary to wash down the well, and either pull the screen and re-set another of the same size, or set an inside screen of smaller diameter. There are, in all of the older fields of the Gulf Coast, numerous wells in which from four to six settings of screens have been necessary at the same depth because of corrosion of this type, and the writer has known of a few cases in which as many

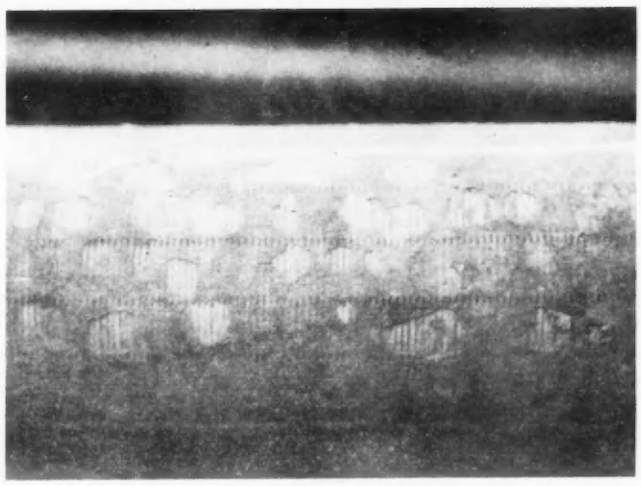

FIGURE 3

Outside of a screen removed from a high sulfide well, showing impervious coating of corrosion products.

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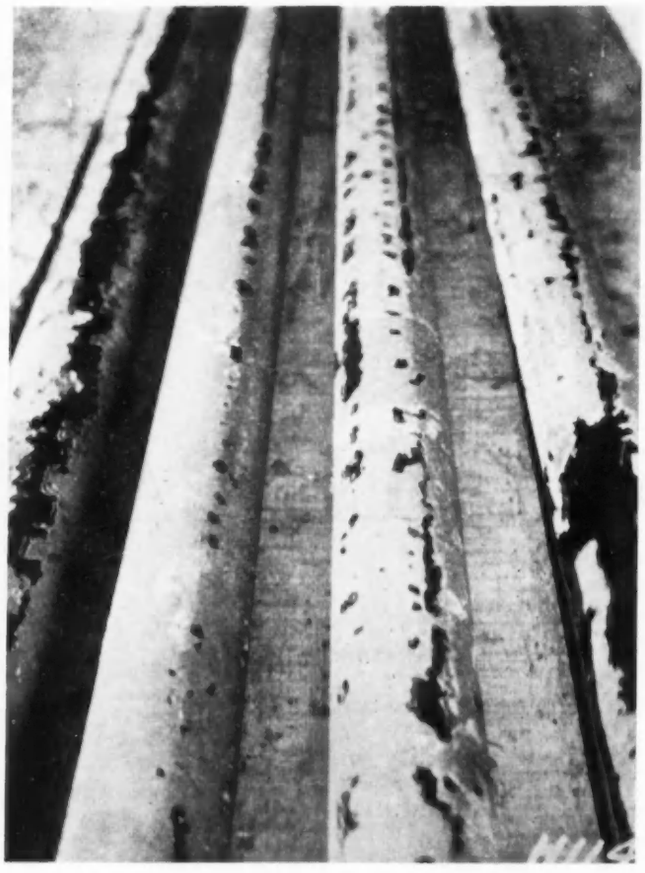


FIGURE 4
4½-inch, 15-lb. oil string removed after less than a year's service in a well at Goose Creek.

as 15 settings of screen have been made at a given depth within a few years because of corrosion failures.

The only apparent remedy for corrosion of this type lies in the use of screens made up of corrosion-resistant metal. The use of corrosion-resistant wire upon iron or steel pipe usually defeats its own purpose, since differences in electrical potential result in accelerated corrosion of the pipe, and in rapid failure of the screens. Very successful results have been obtained by the use of screens in which both pipe and wire or buttons are made of corrosion-resistant alloys. Although the cost of such screens is at first somewhat startling, it constitutes a very minor part of the cost of a well, and will be repaid many times over in 90 per cent of the wells of the Gulf Coast.

Corrosion of Tubing

Tubing corrosion is very wide-spread in the fields of the Gulf Coast. In almost every field which has passed its flush period, tubing is corroded rapidly in some wells, while in a few fields tubing failures, in as little as two to 12 months are experienced in as many as 20 to 30 per cent of the wells. Although corrosion of tubing is exceedingly troublesome, it does not involve as great an expense as does failure of certain other items of well equipment. In addition, corrosion of tubing can be economically reduced to a rather low point by selection of proper corrosion-resistant ferrous materials for the tubing of wells in fields in which tubing attack is serious. It is usually unnecessary to take special precautions against tubing corrosion in the original equipment of wells in a new field, although an early consideration of the characteristics of such a field may make it possible to install tubing costing only a trifle more than the ordinary steel, and thus reducing to an appreciable extent the future costs of tubing corrosion.

Corrosion of Sucker Rods

Although the fact is not generally recognized, corrosion of sucker rods causes greater loss than does that of almost any other item of oil well equipment. This is due to the fact that corrosion attack, so slight as to be immeasurable, may greatly reduce resistance of highly stressed steel to fluctuating loads. This phenomenon, which is known as corrosion fatigue, is the cause of a large percentage of all breaks of sucker rods.[2] Corrosion fatigue failures of sucker rods are frequent in all fields in which the slightest corrosion is present, and of course particularly troublesome in the fields of the Gulf Coast, where corrosive conditions are generally severe.

The only methods of combatting this type of failure are by reducing pumping loads, by reducing the speed of pumping to get away from high impact stresses, by careful counterbalancing, or by the use of special metals for making up the rods. The past tendency has been to use rods of very high tensile strength, but the recent success which has attended the use of wrought iron sucker rods, in certain highly corrosive fields, serves to show that high fatigue resistance may be of greater importance than is very high tensile strength.

In many of the Coastal fields, sucker rods are not only subject to corrosion fatigue failure, but also experience direct pitting attack. In general, the fields and wells in which this direct attack takes place are the same as those in which tubing suffers severe corrosion. In some cases, only the boxes of the rods may be attacked; cases have also been observed in which the boxes and rods were substantially unaffected, but where the threads were corroded

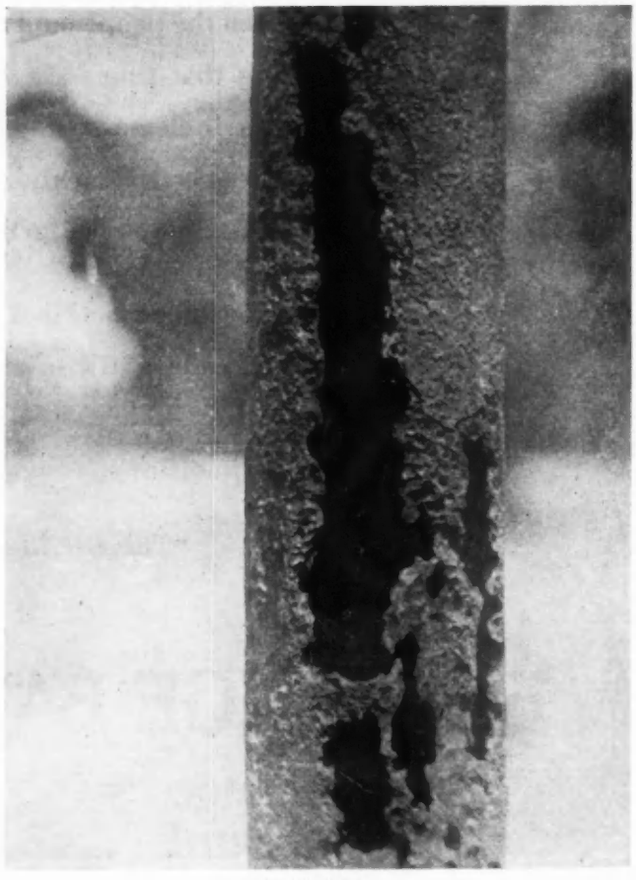
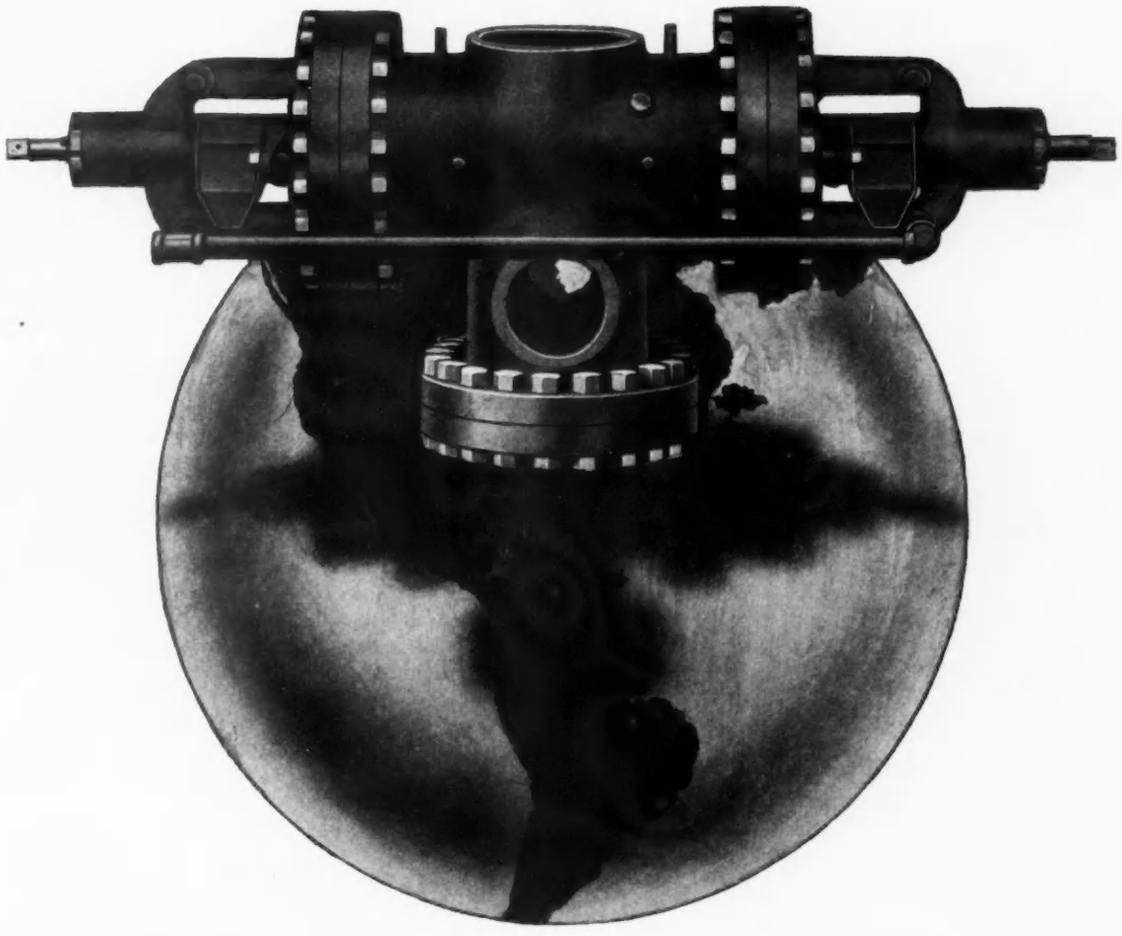


FIGURE 6
Collars from a string of tubing removed from a Coastal field.

[2]Gill & Karl, A. P. I. Prod. Bull. No. 208, p. 27, December, 1931.



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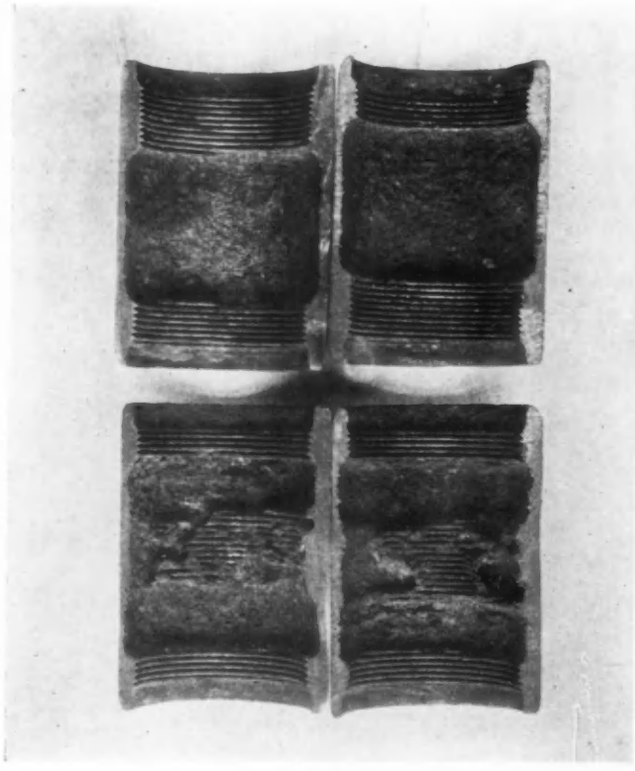

FIGURE 5

Tubing removed from flowing well at West Columbia

off of the pins. In other cases, the entire body of the rod may be affected by pitting. An interesting and rather prevalent form of attack is the formation of a ring of deep corrosion pits about 8 to 12 inches back from the end of each rod. This corresponds to the limit of the portion of the rod which was heated to a high temperature during the upsetting operation. The first strings of rods to be normalized were so treated in an attempt to obviate this type of corrosion by making the rod metal uniform, and normalization proven reasonably successful for these pipes.

Corrosion of Working Barrels, Balls and Seats

As would be expected from the above description of corrosion in wells, working barrels and balls and seats are badly corroded in many of the fields of the Gulf Coast area. Due to the fact that very superficial corrosion of these pump parts will cause them to give trouble, this corrosion is of importance in many wells in which attack of tubing or casing is so slight as to be negligible. The direct losses which arise from corrosion of pump parts is usually relatively slight, but the losses due to leakage through corroded balls and seats, and wear on cups by slightly pitted working barrels, and to shut-down time and wear on rod and tubing threads while making repairs, are a very important part of the costs of lifting oil in the Gulf Coast. The magnitude and importance of these indirect losses has been pointed out in a previous paper[2] and need not be entered into here. They may be indicated by the fact that most cup replacements are due to corrosion of working barrels, and that in a large group of Gulf Coast pumping wells an average of two cup jobs per well per month was necessary over a period of several years.

Corrosion of Surface Equipment

Atmospheric corrosion in the Coastal belt, in which most of the salt dome fields are located, is exceptionally severe, and all exposed metal is subject to rapid deterioration. Prevention of loss from this atmospheric corrosion is, however, relatively simple, since it involves only proper painting programs. Care should of course be exercised in selection and application of paints, since the use of proper paints, even at slightly added expense, will completely eliminate losses from atmospheric corrosion, while improper paints or painting usually are entirely without value.

Steel tanks, in addition to suffering from atmospheric corrosion, are internally corroded by oil well brines. In sulfide fields, the under sides of the decks are attacked in exactly the same manner as are tank decks in West Texas and the Panhandle, while in non-sulfide areas rapid corrosion is confined to the tank bottoms. Standard methods of prevention and repair are used.

Tank bottoms and buried pipe-lines deteriorate rapidly through corrosion by soils. From the soil corrosion standpoint, the Coastal belt is one of the "hot" areas of the country, and this corrosion affects buried metals in oil-fields in an accentuated degree, due to the frequent presence of salt water in the soils.

Summary

As may be seen from the foregoing very brief discussion, corrosion affects all classes of production equipment used in the Gulf Coast fields. Although each field, and almost each individual well, must be treated as an individual problem in developing means for corrosion prevention, past experience in the Coast shows that the likelihood of corrosion troubles is greater in Coastal fields than in most other producing areas.

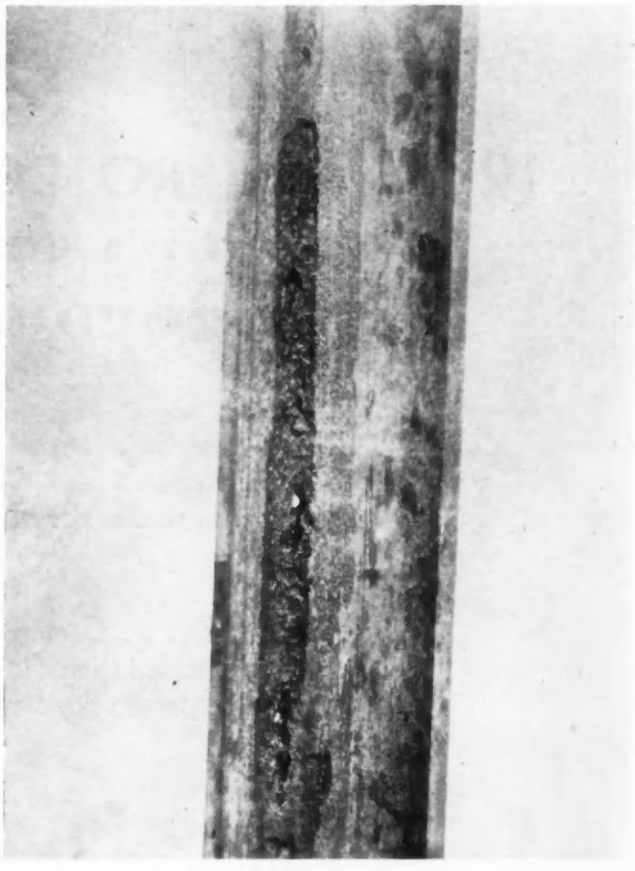

FIGURE 7

Failure of galvanized iron tubing after 75 days' service in a well at Hull. The rapid corrosion was due to rod wear, which removed the zinc coating from the portion corroded.

[2]Gill & Karl, loc. cit.

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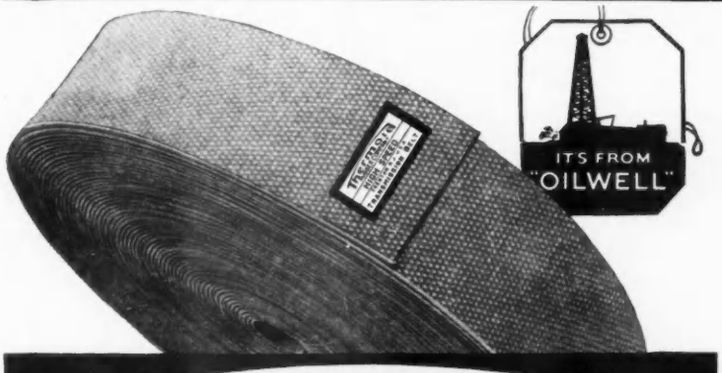

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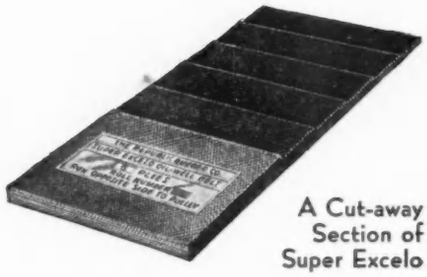

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Special Methods *Required to Drill Through Overhanging* Cap Rock and Salt

SIDNEY A. JUDSON
***and* J. C. BATTLE**

Texas Gulf Producing Company, Houston, Texas

APPROXIMATELY 100 wells on five domes in the Gulf Coast of Texas and Louisiana have been drilled through overhanging cap rock and salt into the oil sands of sedimentary formations beneath during three years since the discovery of a large flowing well beneath the overhang in the Barbers Hill field. During the previous 35 years only about eight or 10 wells had been drilled through overhanging salt on the various domes in the Gulf Coast. At the present time wells drilling through overhanging salt are confined to Barbers Hill, High Island and Orchard in Texas and Lake Barre in Louisiana. Approximately 90 per cent of wells which have been drilled through a salt overhang have been at Barbers Hill.

The fields mentioned above are the shallow "piercement" type of salt dome. The greatest amount of salt yet drilled through is approximately 2800 feet found at Barbers Hill. The top of the overhanging salt on this dome ranges from a depth of 1200 feet to as low as approximately 4800 feet. Producing oil sands have been found from 50 feet to several thousand feet below the salt. These sands have been at least as prolific as flank sands found around the normal type of salt dome. These rich oil deposits already found have encouraged operators to continue drilling additional wells through known overhangs and to search for additional ones on other domes.

Rotary drilling methods as previously developed in the Gulf Coast or in other parts of the United States required the addition of special methods to drill successfully through the cap rock and salt of these overhangs. A brief description of the overhang is necessary to understand the difficulties encountered. Figure 1 is a diagrammatic cross section taken from the east flank of Barbers Hill, which is considered as being generally typical of conditions existing on domes having salt and cap rock overhangs. Near the base of the unconsolidated sands and shales above the cap rock there is portrayed a broken sandstone resulting from the cementing action of the lime charged waters percolating into the loose sands immediately above the cap rock and cementing them into a rock. This sandstone is occasionally cavernous. The upper portion of the cap rock proper consists of impure calcite sometimes 100 to 200 feet thick. This is often porous and has occasional caverns. The narrow zone below this consists of gypsum and selenite which separates the calcite from the anhydrite beneath. This gypsum-selenite zone is the bane of the operators because it contains irregular connecting caverns in which the bit will occasionally drop as far as 15 to 25 feet without hitting anything. The bottom zone of the cap rock consists of massive anhydrite with occasional cavities at its contact with the salt. It is of interest to note that the deeper the point at which the cap rock is found, the less likelihood exists of encountering large cavities.

The salt itself is the typical rock salt of the average Coastal salt dome. It is impure in that it usually contains from one to eight per cent or more of anhydrite crystals disseminated through it. At the base of the salt is found the so-called "gouge" zone consisting of "anhydrite sand" remaining from the solution of the salt, mixed with salt, massive anhydrite, shale and sand accumulated as the formations dragged their way down the dome in their normal sinking movement, or when the dome thrusts its way upward through them.

The sedimentary formations below the salt which carry the pay sands are similar to the beds found around the flank of a normal dome not having an overhang.

Drilling Through Cap Rock

The unconsolidated sands and shales above the dome are quickly and easily drilled. In well "A" in Figure I, assumed for this purpose as an average well through an overhang, it will be noted that a 20-inch conductor pipe is set and cemented at approximately 36 feet. Through this a hole is drilled sufficiently large to set a string of 13⅜-inch O.D. casing on top of the calcite zone of the cap rock proper unless caverns are encountered in the sandstone above, in which case it is sometimes the practice to set this string on the first large cavity in the sandstone. Great care is exercised to set casing at least as soon as the extreme top of the calcite zone is reached since at any point below this a large cavity or cavern may be encountered through which the drilling mud fluid would be lost into the porous and cavernous cap rock, and in the terms of the driller a "lose out," or loss of the drilling mud would occur, which, if the hole had not been already cased would likely result in "sticking" the drill stem. In extreme cases a "cave in" might even result from this at the top of the hole threatening the loss of the derrick.

Figure 2 illustrates the movement of the drill fluid into the cavernous and porous zones of the cap rock during a "lose out." It should be specially noted that these caverns are already filled with salty sulphurous water. They have a probable ultimate connection with the shallow sands above the cap rock allowing the movement of fluid under additional pressure, since the fluid in the hole drops immediately to a certain level below the surface when a cavity is encountered. At Barbers Hill the amount of this drop is from 150 to 175 feet and has remained practically constant during the last three years of drilling operations in which about 90 wells have encountered these cavities and probably several millions of barrels of mud and water have been pumped into them.

Several methods have been developed by which it is possible to drill ahead through and below a cavernous or porous zone of the cap rock. The particular method used varies with the depth of the hole and the size and character of the cavities. The upper zone of cavities in the calcite is usually cemented with ordinary cement, adding a small amount of bentonite, under the trade names of Aquagel or Wy-Gel, when these cavities are large. This bentonite increases the natural "angle of repose" of the cement and causes it to fill and shut off these caverns instead of spreading out in a thin

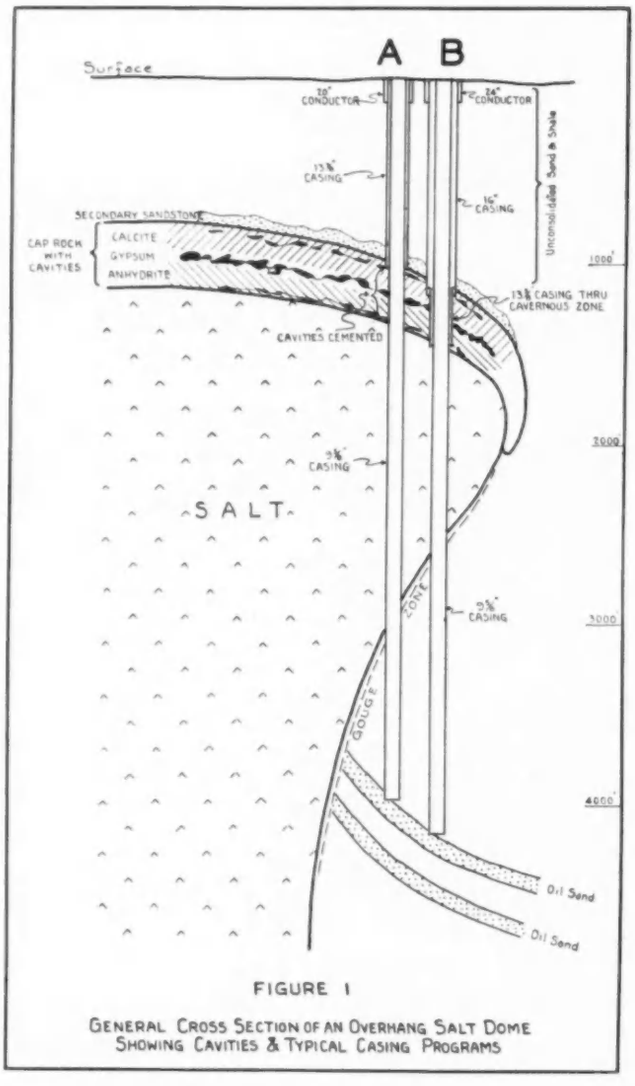

FIGURE 1

GENERAL CROSS SECTION OF AN OVERHANG SALT DOME SHOWING CAVITIES & TYPICAL CASING PROGRAMS

layer over a wide area along the bottom leaving the upper part of the cavern unfilled as occurs when neat cement is used. In certain cases it is possible to drill ahead without cementing but when these caverns are found at a shallow depth it is usually best to cement the cavity to prevent boulders and loose sand which occurs as inclusions in the calcite, from falling into the hole while drilling and thus sticking the drill stem. Old time operators in the Gulf Coast have in the past seen a succession of bizarre methods used to fill or attempt to fill such caverns. These range from dropping large "hunks" of surface clay or dried mud from old slush pits into the well, to pumping cotton seed hulls, saw dust, beet pulp, Spanish moss, hay or stable products, etc., into the well to bridge the cavern. These other methods are sometimes temporarily successful but in general they are likely to give way as the hole is drilled deeper. An inside string of casing or liner could be set at this point but on account of the cavities to be expected deeper in the hole it is deemed unadvisable to set an extra string in this zone unless positively forced to do so.

Cavities in the Gypsum-Selenite Zone

This zone usually contains the large irregular caverns most dreaded by the operator, since they furnish the "drops" recorded by the driller when his bit suddenly finds nothing beneath it. These large caverns at the best require much time and expense to overcome. The principal method employed is to place successive "batches" of the special bentonitic cement until the portion of the cavern adjacent to the hole is entirely filled and the well again "gets returns." The hole can then be drilled through the massive anhydrite below with comparatively little difficulty. At the contact of the anhydrite and salt occasional cavities are found but these can usually be cemented with little difficulty. Well "B" of Figure 1 shows a slightly different casing program which calls for 16-inch O.D. casing on top of the cap rock and in addition a liner of 13⅜-inch O.D. casing to be set below the cavernous zone and fastened to the 16-inch casing above by a special self expanding packer. This lessens the amount of cementing necessary and usually saves time, but of course, adds to the casing cost over that of the program used in well "A."

Drilling Through Salt

The Problem.

Many wells in the United States have been drilled through gently dipping beds of salt where small angular deflections of the hole would not interfere with hitting the pays below in a favorable position. In contrast, the steeply dipping pay formations in flank sands of salt domes require holes to be drilled with but little deviation from the vertical. Also, for years operators had known that drill stems crystallized when drilling through salt and it was erroneously believed that this condition resulted from the chemical action of salt water on the drill stem. Coastal operators found that in the earlier wells through salt the drill stem did crystallize and break, causing an extremely difficult fishing job. Some of these holes were cemented back to redrill portions of them. It was then found that such enormous amounts of cement was required to fill the hole that the drill hole must have enlarged to many, many times its original diameter and a big solution cavity formed by the dissolving action of the drilling fluid upon the soluble salt. In addition surveys frequently showed many of these holes to be very crooked.

The Methods.

Situations resulting in the conditions mentioned above are shown in "D," "E" and "F" of Figure 3. "D" illustrates a hole being enlarged by the circulation of fresh water drilling mud, as at "D_1." The further deepening of this hole

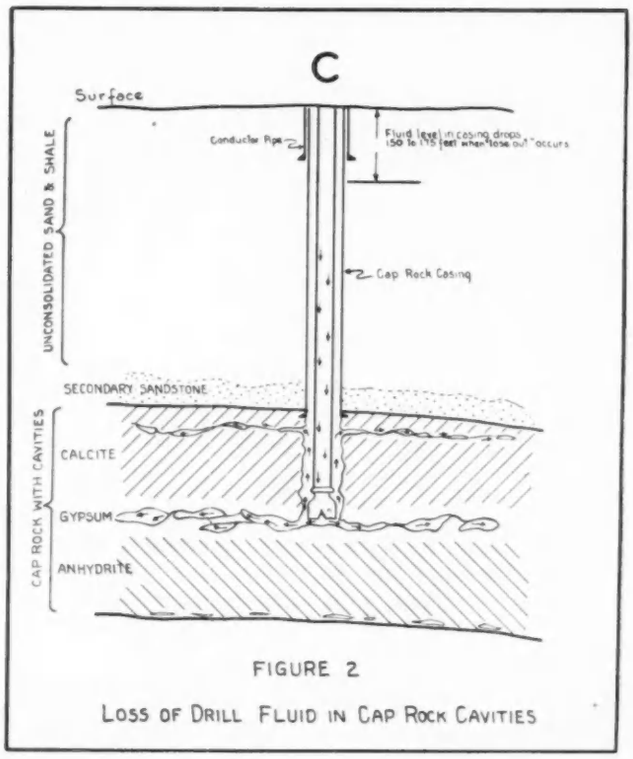

FIGURE 2

LOSS OF DRILL FLUID IN CAP ROCK CAVITIES

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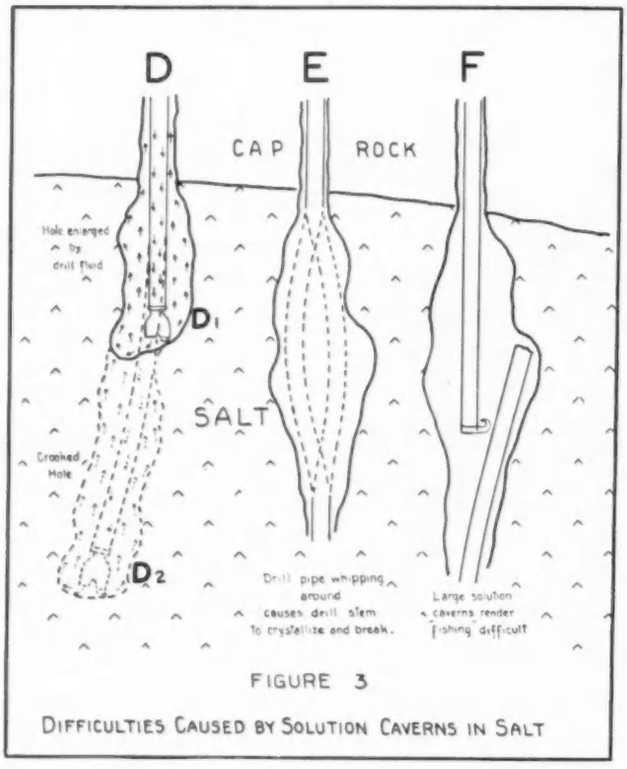


FIGURE 3

DIFFICULTIES CAUSED BY SOLUTION CAVERNS IN SALT

is illustrated by "D_2" which shows how a hole frequently becomes crooked by the drill stem leaning against the lower wall of a solution cavity. "E" illustrates a drill pipe under compression whipping around inside a large cavern which quickly causes the drill stem to crystallize and break. "F" shows a typical resulting fishing job where the top of the drill stem has tilted over into the side of such a cavity beyond the reach of fishing tools.

Enlargement of the drill hole in salt and resulting solution caverns can theoretically be prevented by drilling with a super-saturated salty mud or salt water. However, this would soon result in an accumulation of salt "cuttings" in the bottom of the hole sufficient to interfere considerably with drilling. Accordingly, as soon as the salt is reached attempts are made to bring the drilling fluid to such a condition of salinity that the salt cuttings in the bottom of the hole will be dissolved without at the same time causing the upper salt walls to the hole to be excessively enlarged. This is accomplished by continuously adding small amounts of fresh water to the salty mud after penetrating the salt to a sufficient depth to super-saturate the drilling fluid. This, of course, in practice can at the best be done with only a certain degree of completeness, but in general the experienced operator has learned, mostly through "trial and error," to drill a hole through the salt with only comparatively minor solution of the sourrounding salt walls. This does away with the crystallization of the drill stem and prevents the resulting bad fishing jobs shown in "F" of Figure 3.

After drilling continues for a while in salt, the cavities in the cap rock that previously had been cemented off occasionally give way. The reaction of the salt water on the walls above has caused the breaking down of these cavities, which led the operators erroneously to believe for a time that they had found cavities in the salt. These cavities must be plugged off again with cement, or additional string of casing set.

Crooked holes can usually be prevented only by sound engineering principles and their practical application by a specially trained field force who have a thorough knowledge of the principles involved. Operators at present consider that the most important feature in preventing crooked holes in salt is to run very long heavy drill collars or "lace joints" immediately above the bit, tapering off upward through a succession of gradually reducing sizes of drill stem until the regular four-inch drill stem is reached. Another method of securing a vertical hole is to drill while adding large amounts of fresh water and carrying only one or two "points" of weight on the bit, thus allowing the heavy drill stem to keep itself vertical by gravity. This method of keeping a hole straight is not in general use since the large solution cavity thus formed by the fresh water would likely cause a bad fishing job if for any reason the drill stem parted within the salt. Furthermore if the hole were successfully completed no walls would be left to support the casing, necessitating filling the space around the casing with unreasonable quantities of cement.

Straightening Crooked Holes in Salt

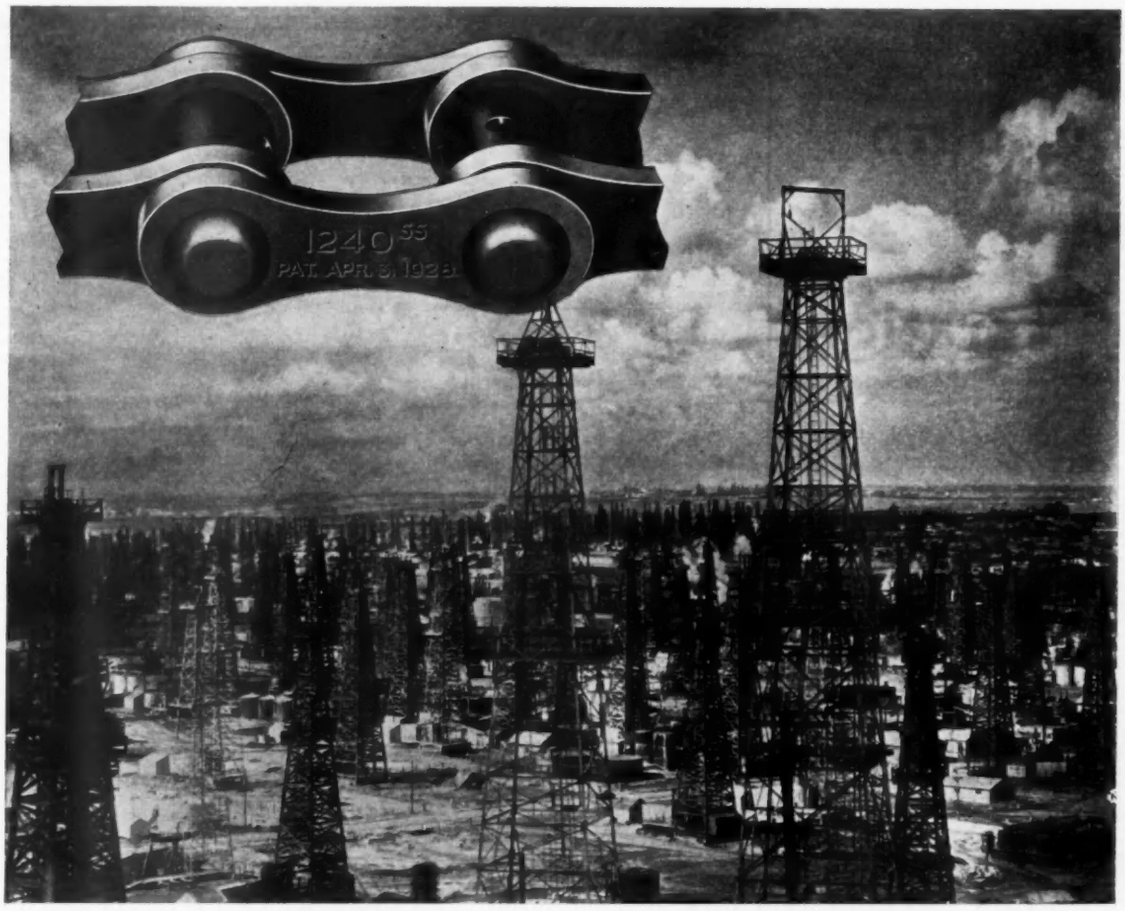
The most common procedure of straightening a crooked hole in salt is to cement the hole back up to the point of "crook." The hole is then carefully redrilled using only a small amount of weight on the drill stem, and after drilling for a distance through the cement there is a fair chance that the old hole which is already filled with cement, will be sidetracked, and that the new hole will be straight. Sometimes this method will not work and the new hole will persist in following the old hole. Usually the next step is to enlarge the hole so that the drill stem may hang vertically by gravity. This is done either by reaming the hole while using fresh water as a drilling fluid or by reaming alone. When the new hole has been carried past the bottom of the original hole, normal drilling can be resumed.

The gouge zone beneath the salt shown in Figure 1 occasionally carries considerable volumes of gas or artesian sulphur water. Accordingly at this point the hole is usually "mudded up" again instead of being drilled with the salt water fluid into which the mud has gradually changed while drilling through the salt.

Drilling in the unconsolidated sedimentary formations beneath the salt is rendered difficult by the fact that the mud which is still quite salty tends to break down the walls of the hole increasing the hazard of "sticking" the drill pipe. At this point the condition of the mud must be carefully watched and it is frequently the custom to add a small amount of bentonitic compound. When the producing sand is reached it is common practice to set and cement a string of 9⅝-inch O.D. casing or possibly seven-inch O.D. casing. The well is then completed in the ordinary manner of the Gulf Coast by setting screen in the oil sand.

General Conclusions

While any well in a salt dome of the "piercement" type is highly individual yet in the case of drilling through overhanging salt it becomes almost completely so. There is no assurance that a casing program determined in advance can be carried out since cavities at unexpected places in the cap rock or solution cavities producing fishing jobs in the salt, may force the premature setting of a string of casing. However, any well should be started with a hole of sufficient diameter to permit the setting of at least a seven-inch oil string on the producing sand. The estimated time required to complete a well through overhanging salt is at any time liable to be doubled on account of unforeseen complications due to the overhang. The high recoveries per well expected in the sands beneath the overhang is the incentive prompting operators to match their wits, time, and money against the unending problems of drilling through a salt overhang. The rapid creation of special methods to combat the peculiarly individual conditions is a credit to the several organizations who have pioneered in this type of operations.



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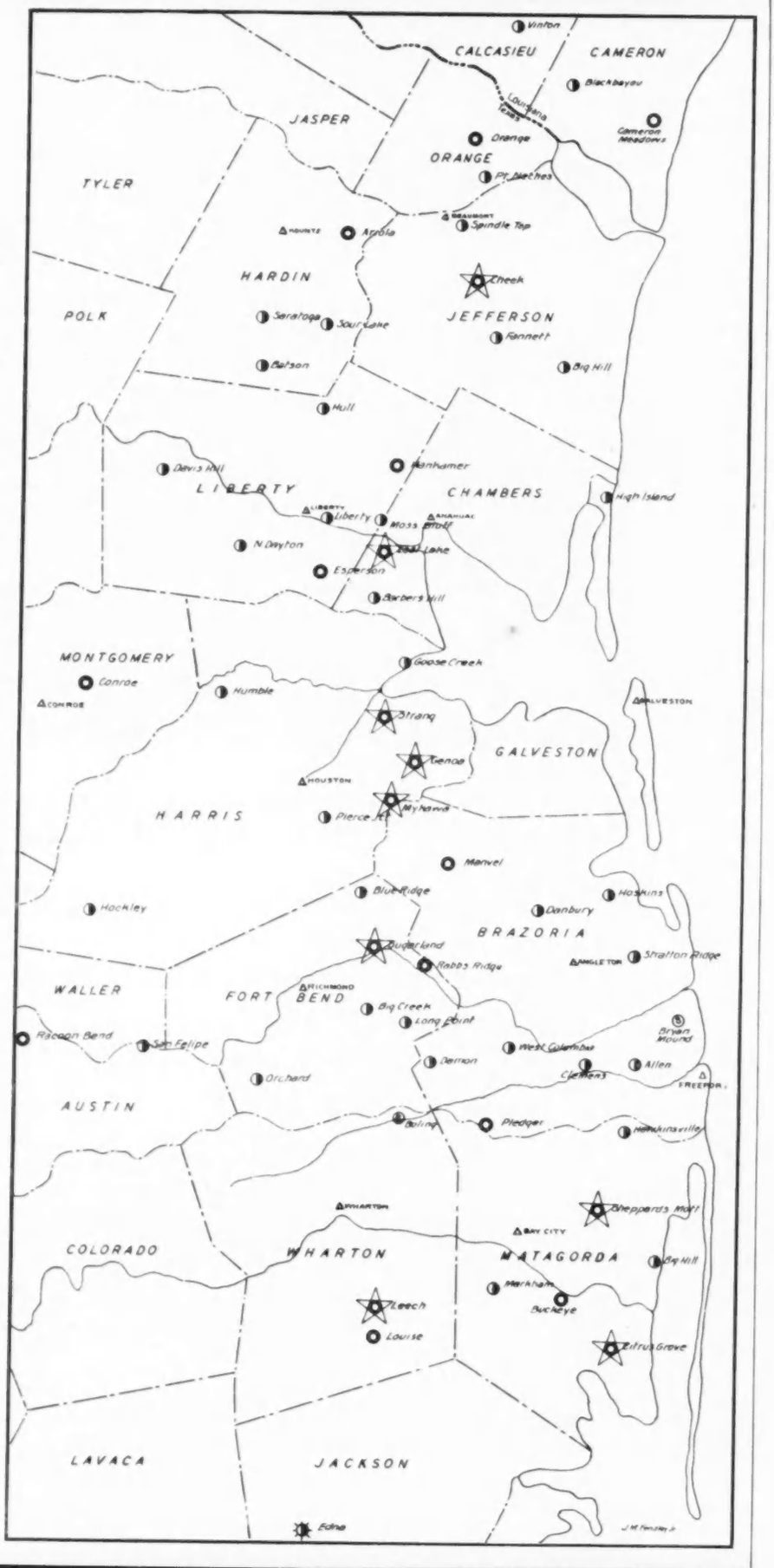


◑ Shallow Domes
⊙ Deep Seated Domes
★ Domes located by Cockburn

Maritime OR OFFSHORE Drilling *in the* Gulf Coast

IN early Gulf Coast days offshore drilling generally followed the establishment of a definite trend from the land of a particular field out into the water. Sometimes the water was a shallow bay, sometimes a bayou. Maritime drilling was restricted largely to extension wells. Hence the equipment used was largely a makeshift of that at hand.

Concurrent with the recognition of geophysical instruments, indications or interpretations of which seemed to show a preference in many instances for areas covered with water, marsh grass, or other nuisances, special types of equipment for offshore drilling were developed. The wide difference in degrees of accessibility of the places to be drilled called for widely different types of equipment. Availability of fuel or electricity entered into the problem.

With the solution of many of these problems, wildcatting and the resultant production development in lakes and rivers has increased, creating concurrently a branch of the producing branch of the industry which is strikingly individualistic.

While Lost Lake, Goose Creek, and possibly one or two other places in Texas have witnessed a small amount of offshore drilling, Coastal Louisiana has developed most of the technique and equipment for this class of operation. (California offshore drilling comes under another classification due to the fact that the water on the West Coast is much deeper.)

Inasmuch as operations of The Texas Company out of Houma, Louisiana, involve eight domes, six in Terrebonne Parish, one in La Fourche Parish, and one in Plaquemines Parish, at the Mississippi River's mouth, and as all of the operations are on the water, and as transportation to and from them is by water, a study of some of the practices and equipment of this operator should be worthwhile.

In Garden Island Bay, at the river mouth, operations are taken care of with all equipment on a steel barge. Gasoline engines are used for draw works and mud pumps. A similar layout of equipment is used by Freeport Sulphur Company at Lake Washington, also in Plaquemines Parish.

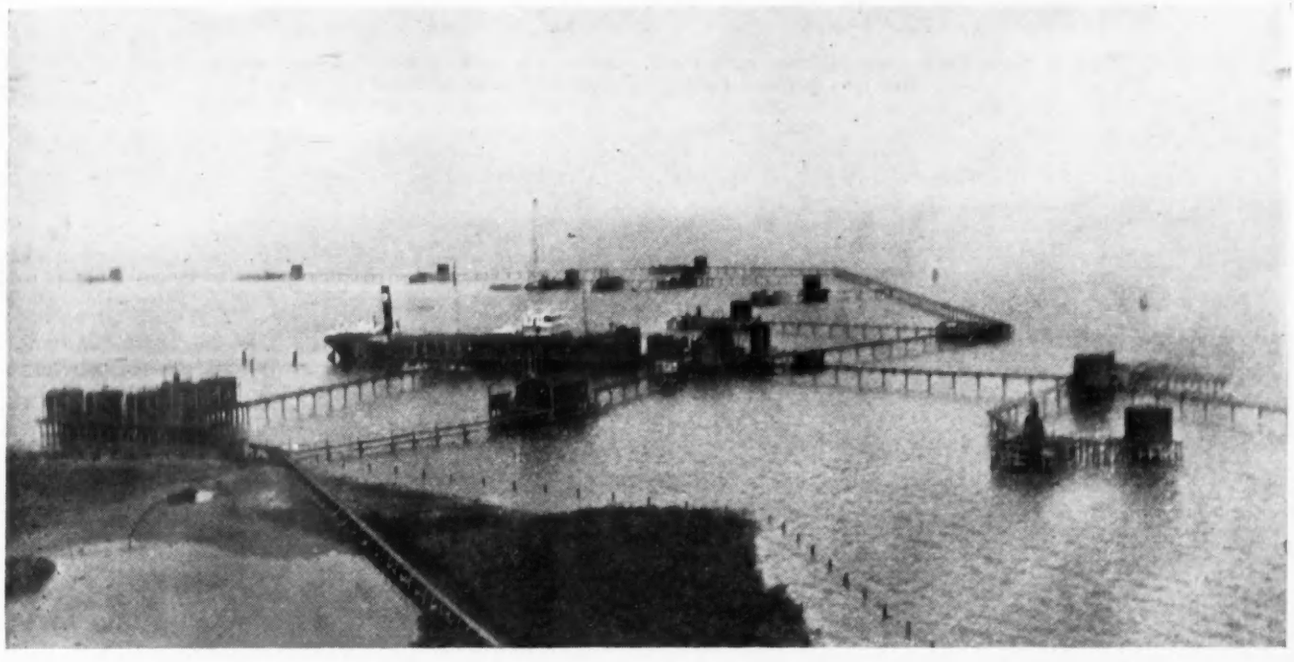
Floating Electro-Diesel

The Texas Company's operations in La Fourche Parish have called for an alternating current hook-up. The power plant is mounted on a steel barge specially constructed for this type of service. Its general idea of design involves the utilization of internal combustion engines for generating electric power for rotary drilling.

Two Cooper-Bessemer Diesels are installed on the barge. Each has a capacity of 240 horsepower. Each is direct connected to a 175 kilowat generator, alternating current. Either of the engines is capable of meeting power demands of ordinary drilling requirements, allowing the other to be held in reserve for emergencies.

Current for draw works and pumps is delivered from the steel barge to the derrick through ordinary cables, the barge being anchored a convenient distance away from the derrick.

In some cases it has been found practicable to utilize

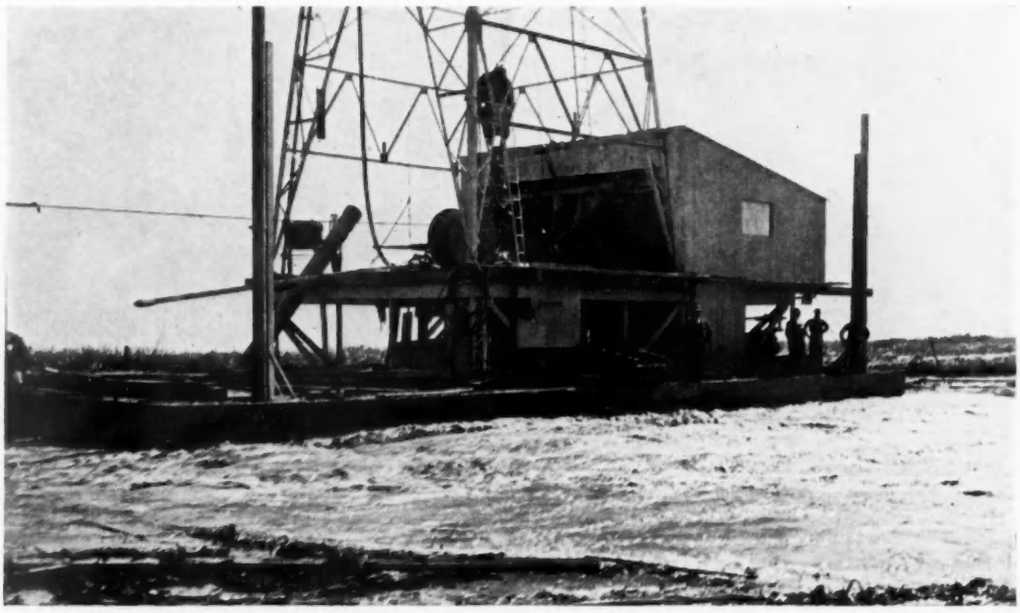


At Lake Barre all wells are connected by a walk on piling. Flow, gas gathering and water lines are laid along these walks.

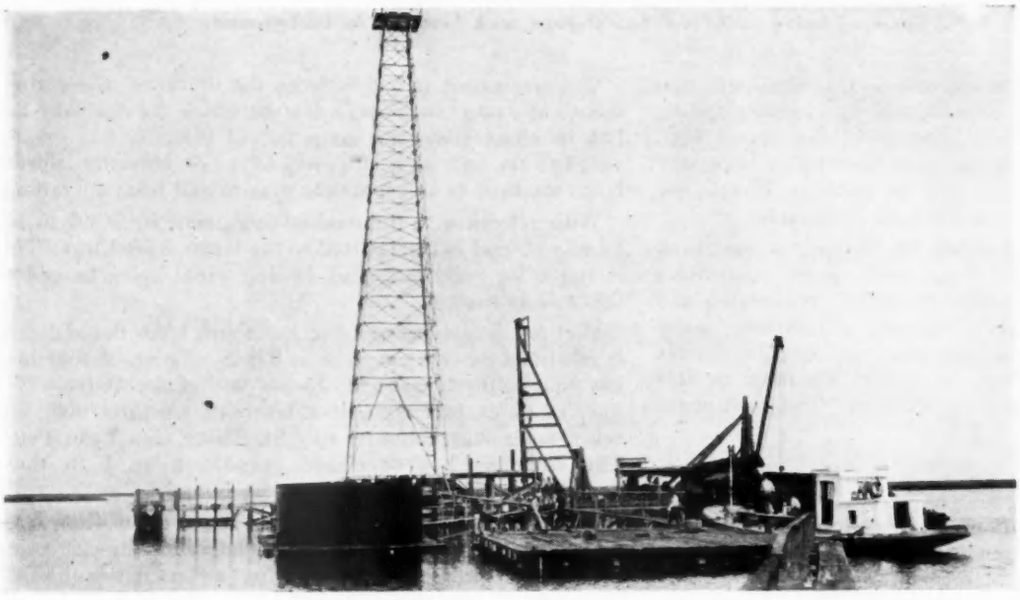
Rotary drilling rig operated by direct current equipment in Louisiana march country.

Some of the field workers leaving camp at Lake Barre

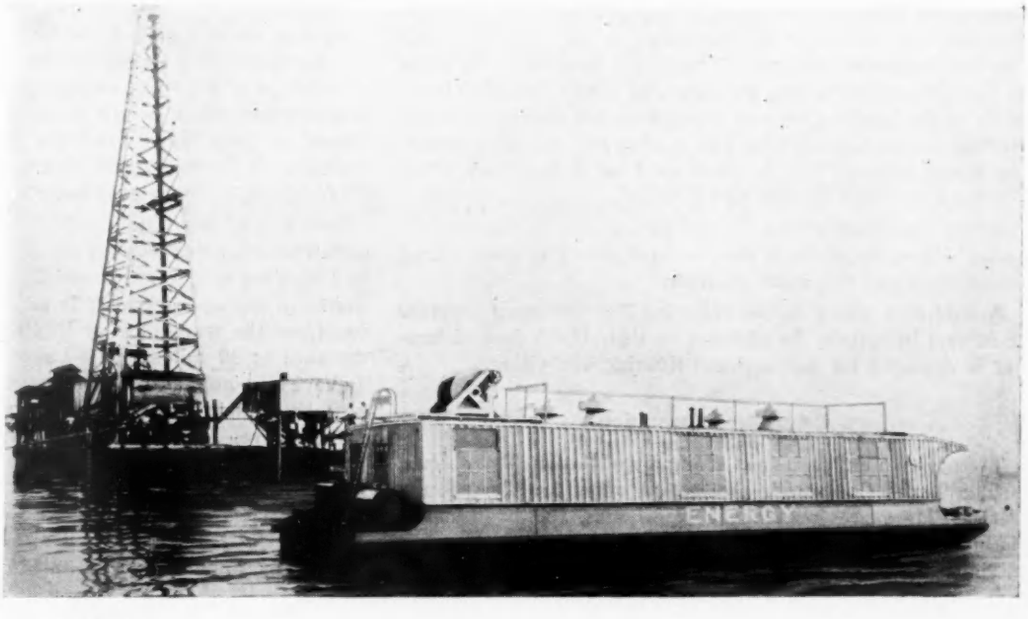
Part of State Lake Barre Dome; each tank represents a well location. Below—Barge and tug transporting Lake Barre Dome crude to tanker.



Floating rotary drilling rig used by The Texas Company as it rides a second shallow gas blowout in Grand Island Bay, located near Louisiana coast on east side of the Mississippi River delta.



Mat job at Dog Lake



Alternating current Diesel-electric rig mounted on barge.

View of Lake Barre, showing wells and two storage tank batteries in background.

steam rigs. This has occurred where fuel transportation does not involve too much expense and where sinking piling is advisable. Some additions to ordinary equipment used in connection with a steam rig have been found necessary in Coastal Louisiana, particularly in parts of Terrebonne Parish where fresh water has not been obtainable.

Where water is not available by drilling, it has been necessary to equip the steam rigs with special condensers and evaporators. Lake or bayou water is evaporated and then condensed, precipitating the salt and leaving water fresh enough for boiler use. Strangely enough, The Texas Company reports that repairs to boilers are more or less in line with costs in effect at points where fresh well water is available.

Foundations

Several types of foundations are used for maritime drilling in the Gulf Coast, depending on the nature of the surface formation and on the depth of the water.

Marsh land locations often are drilled on "mats," or reinforcements on top of the more or less pliable marsh foundation. In such instances it is necessary to dig canals through the marshes to the location. They must be sufficiently deep to permit transportation, by barge, of heavy drilling equipment to the location. A mat foundation job usually calls for electric power, calling into play use of the special generating barge referred to. Lumber used on a mat foundation amounts to about 125,000 feet.

While mat foundations are commonly used in the shallow areas, where the water is deep enough piling is used. Piling foundations are the more common.

A complete piling layout calls for 270 pilings of from 40 to 60 feet in length. In addition to this, 37,000 feet of lumber is required for capping and flooring the pilings.

Centralized Operation

Twenty-two miles below Houma on Bayou Terrebonne is The Texas Company's production office for Terrebonne Parish. Here are located the warehouse, the boat house, the machine shop and the yard. Nearby is located the mud-mixing plant.

Communication is had between the office and the various domes by radio telephone, a feature which the company has had in effect since the early fall of 1932. It has greatly added to the operating efficiency of the organization. Speedboats are used to transport the men to and from operations.

With reference to the mud-mixing plant, from 400 to 500 barrels of mud is transported to the location by barge. This is ample for early stages of drilling, more being barged to the well as needed.

Fuel for operations at Lake Pelto and Lake Barre domes is furnished by two gas wells in Bay St. Elaine. A four-inch gas line connects Bay St. Elaine with Lake Barre. This line, 15 miles in length, is submerged. A three-inch line seven miles long connects Bay St. Elaine with Lake Pelto. The company has developed production on both these domes as well as at Leesville, in La Fourche Parish.

Production from the three domes is picked up from lease tanks (placed on top a piling foundation) by sea-going barges and towed by tugs to waiting tankers out in the Gulf of Mexico. The tankers transport the oil to The Texas Company's refinery at Port Arthur, Texas.

Special provision is made for rough weather which will not permit towing the barges to sea. The company has two steamships which serve as temporary storage, or tank farms, pending the return of fair weather. The "Louisiana" is stationed at Lake Barre, and the "West Lake" which has a capacity of 74,000 barrels, is berthed at the mouth of Cat Island Pass, 12 miles southwest of Lake Barre.

Due to the impossibility of going "as the crow flies" between locations or domes, the distances as the man travels in Louisiana are great. A round trip from the Houma warehouse to the operations calls for 160 miles of travel. Starting from the warehouse and going to Dog Lake dome, the distance is 30 miles; Dog Lake to Lake Pelto, 35 miles; Lake Pelto north to Elaine, seven miles; Elaine south of east to Caillou Island, 14 miles; Caillou Island north to Lake Barre, 10 miles; Lake Barre east to Leesville, 25 miles; Leesville back to warehouse, 45 miles. The direct distances from the warehouse are: to Lake Pelto 25 miles; to Caillou Island, 35 miles; to Lake Barre, 20 miles; to Leesville, 45 miles; to Dog Lake, 30 miles; to Four Isle dome, 25 miles; to Bay St. Elaine, 25 miles—all in a boat.

SPEEDING UP BUSINESS IN THE OIL INDUSTRY

The head of a large supply company which accepts all long distance calls collect from customers and prospects said that he had observed a direct relation between his long distance telephone bill and his sales each month.

"We accept without question collect calls from our customers and any oil man who wants to do business with us," he said.

"Using long distance usually means that before we hang up we have completed the transaction, have the order number, and are ready to start shipment.

"The telephone is one of the most important adjuncts to our business."

* * * *

Long distance service is better today than ever before. Last year long distance calls were completed in an average of 1.6 minutes, and 82 per cent of all calls were completed without the calling party having to hang up.

USE THE TELEPHONE TO SPEED UP YOUR BUSINESS

SOUTHWESTERN BELL TELEPHONE COMPANY

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■ **THE BREWSTER CORE BARRELS**
WIRE-LINE
AUTOMATIC

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SUCCOR-ROD OIL SAVER

■ **THE BREWSTER**
BREAK-OUT ROTARY
OIL BATH SWIVEL
TRAVELLING BLOCK
CROWN BLOCK
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MANUFACTURED IN THE SOUTHWEST BY
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SHREVEPORT, LOUISIANA

★ *Warehouses:* The Iverson Specialty Co., Oklahoma City, Phone 2-2833; The Brewster Houston Store, 2000 Harrington St., Capitol 6811; Long view, Texas, 313 E. Cotton Street, Phone 781. *Export Distributors:* Acme Well Supply Co., Inc., 136 Liberty St., New York City.

Coastal Region *Becoming Increasingly Important As* Crude Oil Refining Center

GEORGE REID
Staff Representative

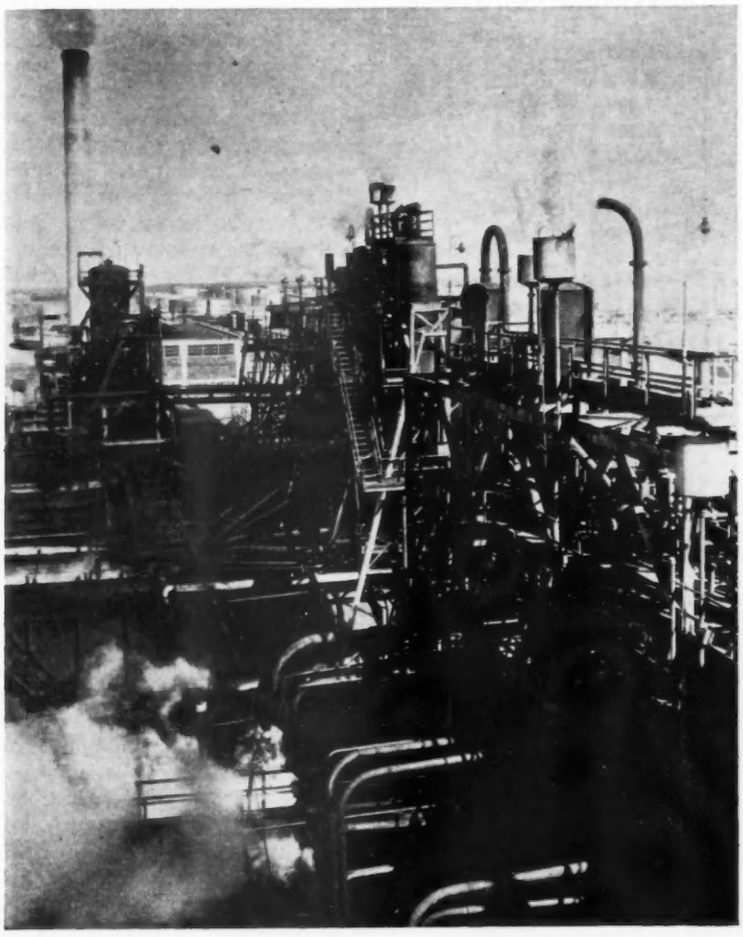
DURING the past two decades the Coastal regions of Texas and Louisiana have become increasingly important as crude oil consuming areas because of the ever increasing oil refining capacity. The district now has 20 per cent of the operating refining capacity of the United States and 18 per cent of capacity. Approximately 25 per cent of crude currently refined in this country is processed in this area.

Total crude processing capacity of the Texas Gulf Coast district is 543,250 barrels daily. South Texas reported capacity is 36,800 barrels. In the Louisiana Gulf Coast territory, and in which one plant at Mobile, Alabama, is included for the purposes of this discussion, there is total refining capacity of 148,000 barrels per day. Total for the region is 728,050 barrels of refining capacity available as crude oil outlet.

In the Texas Gulf Coast, refining is now carried on at about 75 per cent of reported capacity, in the Louisiana Gulf Coast, from 70 to 75 per cent capacity, and in South Texas at about 50 per cent of total reported capacity. Thus this territory is now processing around 530,000 barrels of crude daily, or one-fourth of crude runs for the country.

In the area discussed there are 34 refineries, or 8.1 per cent of the total operating number of 370 in the United States, and seven per cent of the 400 reported plants. These plants, especially those located strictly in the Texas and Louisiana Gulf Coast, process great quantities of crude from West and North Texas, East Texas and Oklahoma. Under proration in Texas and without proration in Louisiana, Gulf Coast and South Texas wells produce from 200,000 to 225,000 barrels of crude daily. The refineries, operating at 500,000 to 530,000 barrels must secure the difference by pipe line delivery, in addition to the large volume of crude oil shipped by tanker to the eastern seaboard and elsewhere.

Refining facilities have been designed to process the various types of crudes available, and because of the marked difference in the heavy Coastal oils and the light oils brought in by pipe line, most of the larger refineries are provided with individual units for processing the different oils. Discovery and exploitation of further fields like Conroe and Hockley, near Houston, will make larger quantities of the high oils more easily available to the Coastal plants, and the refineries of this section are already equipped for their processing.



View of equipment in a large Gulf Coast refinery

25 Companies, 34 Plants

In the area there are 25 companies operating 34 refineries mentioned. Of these companies nine are of the integrated type, owning service station outlets, and these nine operate 17 of the refineries. There are 16 non-integrated type companies, not engaging in retail distribution, which operate 17 refineries. The capacity of the plants owned by the nine integrated companies totals 680,500 barrels, while the capacity of the plants operated by the non-integrated concerns totals 47,550 barrels per day. Thus the refining capacity of the area is dominated 83.5 per cent by the integrated type of oil company.

Possibly because of the characteristic of low gasoline content of the most easily available crude oil the refining districts of Texas Gulf Coast and Louisiana Gulf Coast were among the earliest to become interested in the cracking of petroleum so as to increase the yield of the most valuable product. During the same period of increasing growth of crude oil processing capacity the cracking capacity of the area has also steadily increased, especially since refining concerns have reached the realization that cracking is the only commercially practical means available for both increasing gasoline yield and secur-

Refineries in the Gulf Coast Area

	No.	Crude Capacity	Cracking Capacity
Louisiana Gulf Coast	4	142,000	79,000
Texas Gulf Coast	17	543,250	485,500
South Texas	12	36,800	29,200
Alabama	1	6,000	3,000
Total	34	728,050	596,700

	Crude Capacity	Cracking Capacity
LOUISIANA GULF COAST		
Chalmette Pet. Corpn., Chalmette (New Orleans)	6,000	3,000
Mexican Pet. Corpn. of Louisiana, Destrahan	20,000	.....
Shell Pet. Corpn., Norco (New Orleans)	16,000	10,000
Standard Oil Co. of Louisiana, Baton Rouge	100,000	66,000
Total Louisiana Gulf Coast	142,000	79,000
TEXAS GULF COAST		
American Pet. Co., Norsworthy (Houston)	4,000	.....
Conroe Refining Co., Conroe	250	.....
Crown Oil and Refining Co., Houston	10,000	7,500
Deepwater Oil Refineries, Inc., Houston	3,000	.....
Gulf Refining Co., Port Arthur	125,000	55,000
Humble Oil and Refining Co. Baytown, (Houston)	125,000	172,500
Magnolia Pet. Co., Beaumont	70,000	55,000
Magnolia Pet. Co., Magpetco, (Beaumont)	10,000	.....
Phoenix Refining Co., Houston	1,000	.....
The Pure Oil Co., Nederland, (Beaumont)	30,000	16,000
Republic Oil Refining Co., Texas City	5,000	3,500
Shell Pet. Corpn., Houston	26,000	18,000
Sinclair Refining Co., Houston	31,000	59,000
Stone Oil Co., Texas City	3,000	2,000
The Texas Co., Port Arthur	60,000	96,000
The Texas Co., Houston	20,000	1,000
The Texas Co., Port Neches, (Port Arthur)	20,000	.....
Total Texas Gulf Coast	543,250	485,500
SOUTH TEXAS		
Grayburg Oil Co., San Antonio	2,000	.....
Houston Oil Co., Viola (Corpus Christi)	1,000	.....
Humble Oil and Refining Co., Ingleside (Corpus Christi)	15,000	25,000
Humble Oil and Refining Co., San Antonio	4,500	.....
Magnolia Petroleum Co., Luling	5,000	.....
Misko Refineries, Inc., Mirando City	1,200	1,200
Phoenix Refining Co., Pettus	600	.....
Pioneer Oil and Refining Co., Somerset	2,000	.....
Rado Refining and Producing Co., Laredo	500	.....
The Texas Co., San Antonio	3,000	3,000
Texas Petroleum Products Co., Somerset	1,500	.....
Valley Refining Co., McAllen	500	.....
Total South Texas	36,800	29,200
ALABAMA GULF COAST		
Coastal Petroleum Corpn., Mobile	6,000	3,000

ing necessary anti-knock qualities of their product.

Cracking Capacity

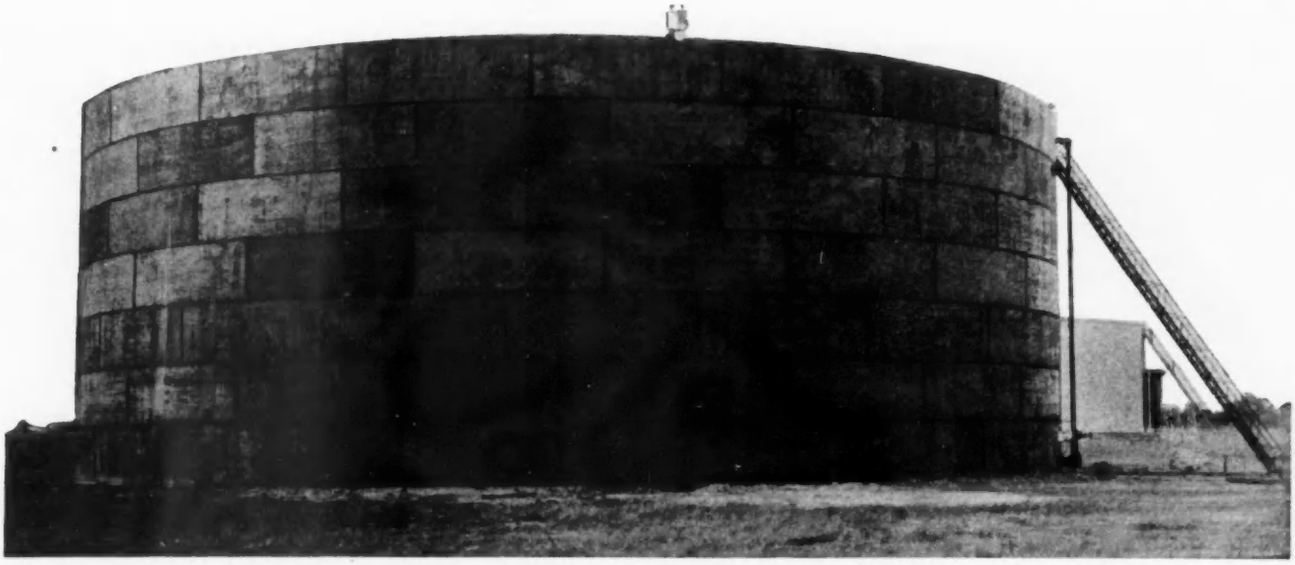
Present cracking capacity of the three areas totals 596,700 barrels per day. Of this, 485,500 barrels capacity is installed in the Texas Gulf Coast district, 79,000 barrels in the Louisiana Gulf Coast, (3000 barrels in Alabama) and 29,200 barrels cracking capacity in Southwest Texas. The total cracking capacity is about 36 per cent of the 1,650,000 barrels total operating cracking capacity of the United States and 29 per cent of the total of 2,050,000 barrels over-all domestic cracking capacity.

In the area being discussed there are 18 installations of cracking units, 12 installations being in the refineries of the integrated companies. The 12 cracking installations are owned by eight concerns, and the total capacity is 576,500 barrels, or 96.6 per cent of the total of 576,700 barrel capacity for the area. One of the integrated company plants is not yet provided with cracking facilities. Six companies operated the remaining six cracking installations, equal to 3.4 per cent of the total or but 20,200 barrels capacity.

It is one of the "signs of the times" that the percentage of cracking capacity being operated of the total capacity reported is much higher than the percentage of crude capacity operated in the same area. Texas Gulf Coast, for example, early in March was operating at 97.8 per cent of the total reported cracking capacity. Louisiana Gulf Coast refineries were reporting 100 per cent of available cracking capacity under operation. Both districts during the same period were operating at about 75 per cent of crude charging capacity. The average percentage of cracking process operation for the United States at the same time was 95.4 per cent, whereas the average percentage of crude charging capacity in operation, over the country, was around 60 per cent.

In recognition of the importance of the cracking process it is reported that several refineries in the area under discussion are studying the matter of improvements to existing cracking facilities, or planning enlargement of present cracking departments, and some reports of refineries not now engaged in cracking planning to soon install this type of equipment.

The future of the area as a crude oil consuming district of ever increasing importance is assured, for not only have many of the present installations been recently enlarged and modernized, but more of this work is contemplated. Reports state that additional refineries will be erected in the area by companies operating elsewhere but which are becoming interested in crude oil production in the Coastal region.



117 Feet Six Inches Diameter by 41 Feet Five Inches High

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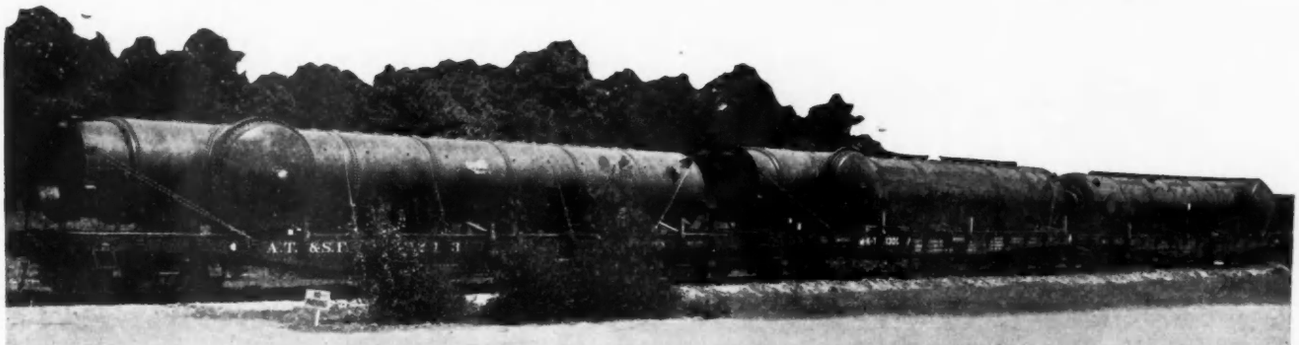
● For welded tanks of any capacity, heavy refinery work and for quick shipment on standard sized underground gasoline and storage tanks, Wyatt's offers a close at hand source of supply.

● The two plants of Wyatt's offer full advantage of freight rates on incoming and outgoing tonnage.



WYATT METAL & BOILER WORKS

PLANTS AT DALLAS AND HOUSTON

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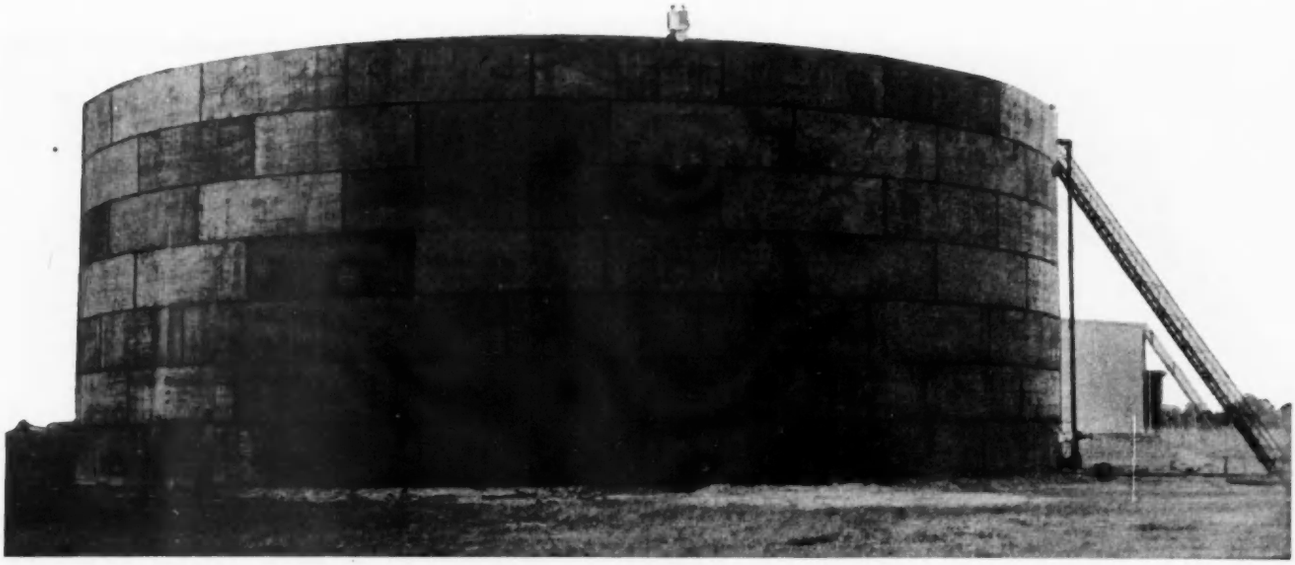

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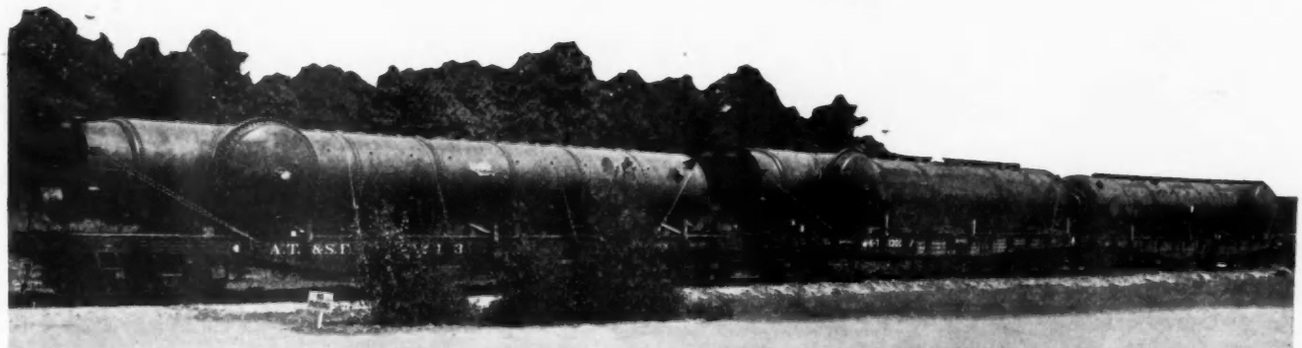

WYATT METAL & BOILER WORKS

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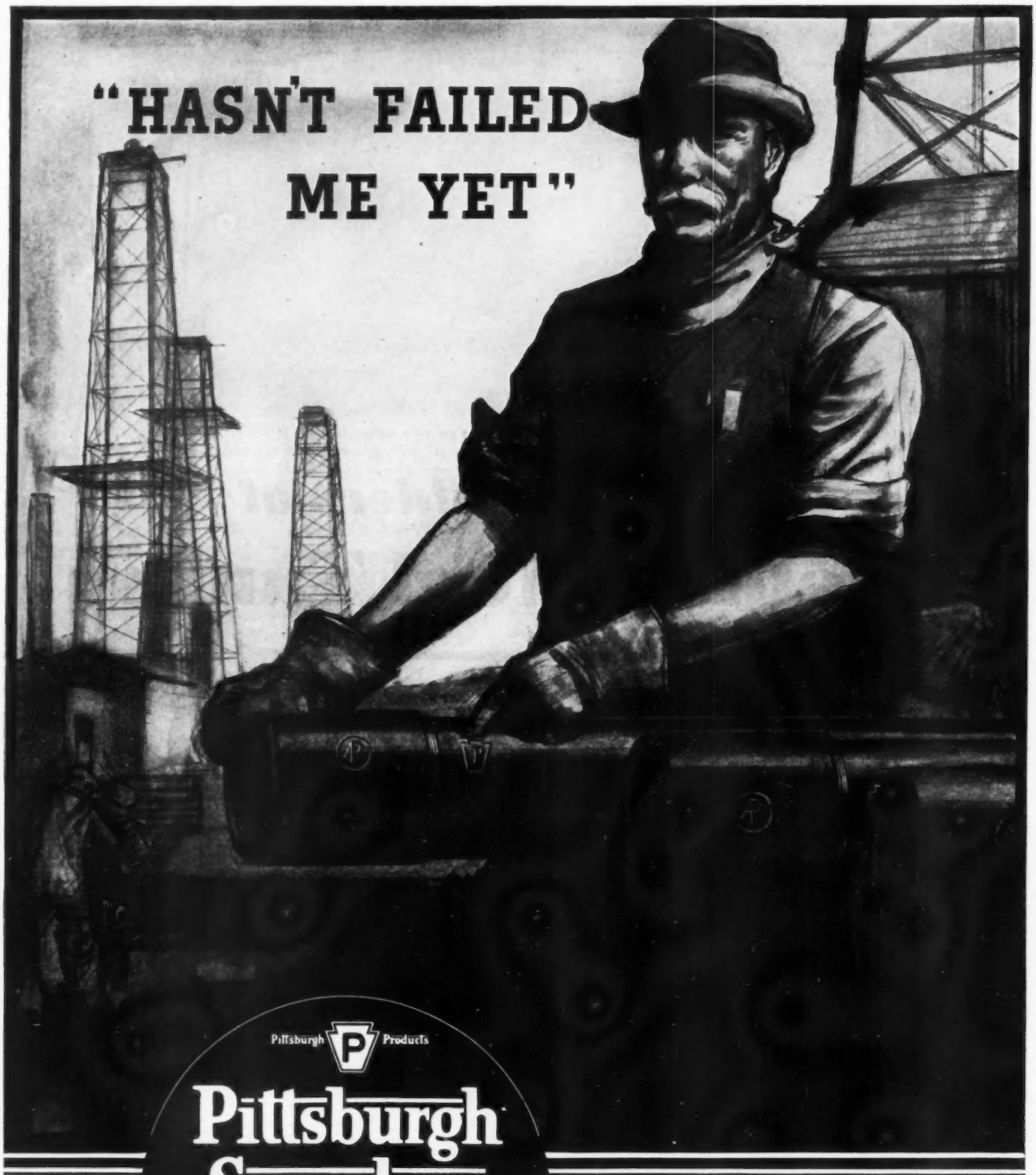

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Legal Pitfalls of Leasing *In* Gulf Coast Section

JOHN C. BYBEE* *and*
T. E. KENNERLY†

As major companies and independents alike have turned to this section as a territory for rapid development in the near future, it is well for operators new to the state of Texas to have in mind some of the fundamentals of Texas law relating to oil and gas.

The "Producer's 88" (revised form) is the type of lease generally used. Under the decisions of Texas, (similar to rulings in many other states) such a lease conveys an interest in the land in fee. If the productive character of the land is established, the lease becomes subject to real property tax. Such lease or any assignment of same is subject to the federal stamp tax recently placed in effect. This tax provides that the first $100 of the consideration shall be exempt. Every additional $500, or fraction thereof, of the consideration calls for a tax of 50 cents. In cases of sales of minerals with a deferred oil payment, the act provides that the actual value of the interest conveyed at the time of conveyance shall determine the amount of the tax. Obviously, this is in some instances very hard to determine and it has become a practice with some buyers to add stamps to the conveyance sufficient to cover only the amount of actual cash changing hands, especially in those instances where the productive character of the land has not been fully established.

It is especially important that operators purchasing oil and gas leases in Texas upon property constituting the homestead of a family bear in mind the status of the oil and gas lease as conveying an interest in the fee. Such a lease on a homestead must be executed by both husband and wife. A contract to lease as distinguished from the executed lease itself, though duly executed and acknowledged by both husband and wife, cannot be enforced against the wife. The reason for this state of facts lies in the statutory enactments of Texas, which provide that a homestead (and therefore any interest in same) can be conveyed only by conveyance executed by both husband and wife, and the wife must be examined privily and apart from her husband, the instrument must be fully explained to her and she must acknowledge that she executes the same as her free act and deed and that she does not wish to retract it. The statute having fixed this definite method of conveyance, it is held that good title can be passed only by actual conveyance so acknowledged. The property covered by the contract for lease being the homestead, the wife can repudiate the contract at any time and refuse to sign the lease. The passing of a valuable consideration at the time of executing the contract does not affect her right to repudiate.

Description of Interest

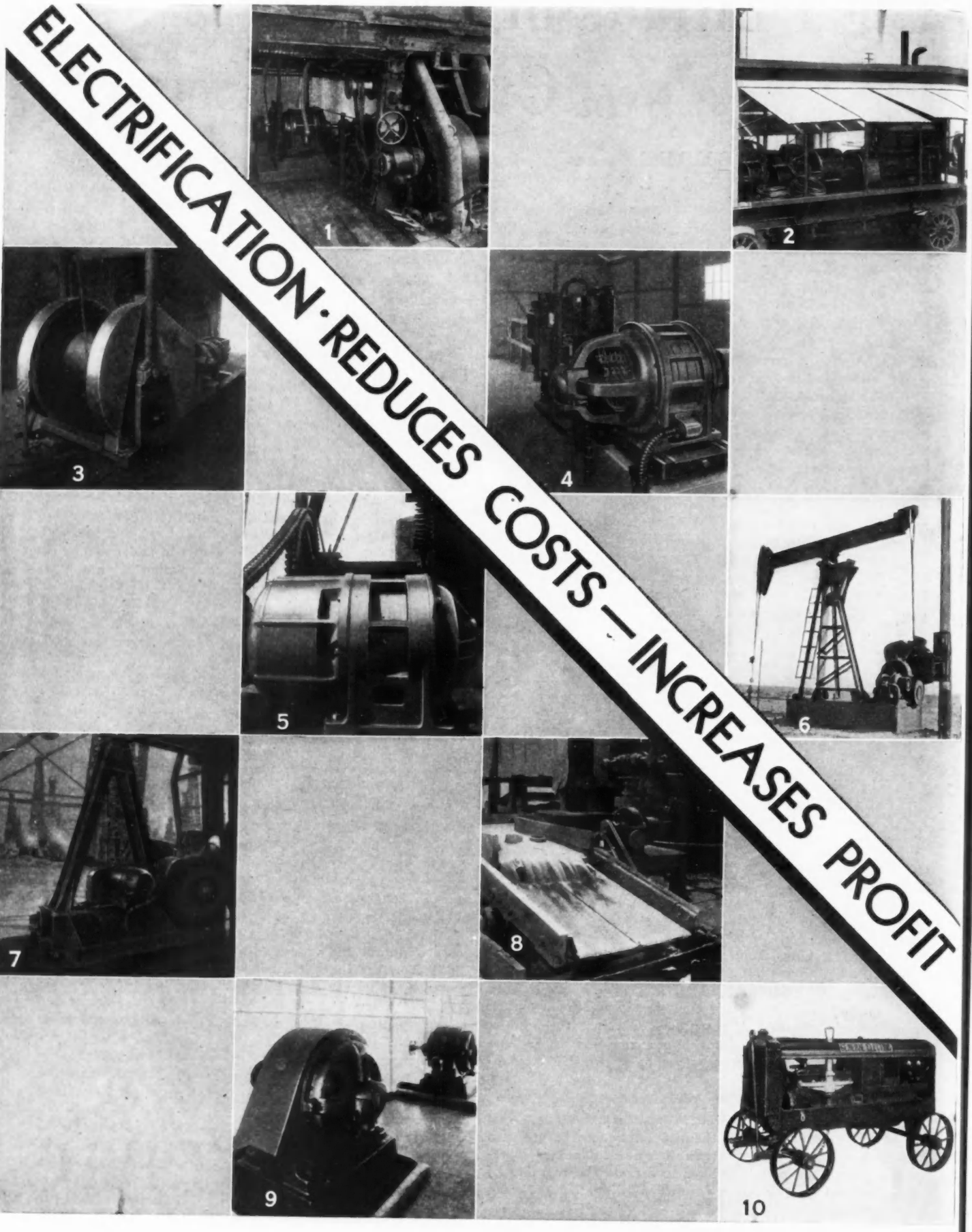
Royalty buyers closing deals in haste and without advice of legal counsel often find themselves the purchasers of a lesser interest than they bargained for and expected to receive, due to the construction placed upon the wording of their mineral deed or royalty contract. In numbers of cases such buyers have purchased one half of the land owner's one-eighth royalty, or one-sixteenth of total production, only to accept a deed conveying "one-sixteenth of the minerals in and under" the described tract of land. Such conveyance does not have the effect intended, as it gives the grantee or buyer an undivided one-sixteenth interest in all of the minerals under the land. He may join in any lease executed and receive his one-sixteenth of the bonus, but he is entitled to only one-sixteenth of the one-eighth royalty. If such person refuses to join in the lease, his one-sixteenth mineral interest may be set apart to him by a partition suit brought for that purpose, or the lessee under a lease from the owner of fifteen-sixteenths of the mineral interest must set apart to the owner of the one-sixteenth mineral interest his interest in full in the event of production, provided such owner of the one-sixteenth mineral interest pays his proportion of the cost of producing the oil or gas.

The one-half interest sought to be purchased by such royalty buyer may be secured by him in the following manner: (a) by a conveyance of "an undivided one-half interest in and to all oil, gas and other minerals in and under" the described tract of land, "subject to existing oil and gas lease" with provisions that the purchaser is not to share in any future rentals or bonuses; or, (b) by a conveyance of "a royalty of one-sixteenth equal part of all oil, gas and other minerals that may at any time hereafter be produced from or upon" the described tract of land.

In some instances persons, companies or individuals, have to deal with ignorant lessors or grantors and the question of recording leases or mineral deeds becomes important. Such buyer should have in mind the importance of recording his lease or deed without delay, as in a number of instances certain lessors and grantors have been prevailed upon to execute subsequent leases and mineral deeds to third parties, covering the same property as the prior lease or deed, and if the subsequent instrument is recorded first, dangerous questions of fact are presented involving the doctrine of such third persons being innocent purchasers for value without notice. An example of this state of facts is shown by the actual case of one whom we shall call Brown, who secured a lease from Smith on March 24, 1932. On March 26, 1932, Smith executed a second lease to Jones. Brown placed his lease of record on March 28, 1932, before Jones had recorded his lease. Jones had no notice of the lease that had been executed to Brown before, he, Jones, secured his lease, and Jones' lease would take priority over Brown's lease. This rule would seem unjust as Brown secured his lease first and recorded his lease first, but the purpose of the statute is to protect subsequent purchasers, and it was necessary for Jones, in order to be fully protected, to file his lease for record immediately upon securing same.

The most serious pitfall to be faced by an operator in the Gulf Coast section, especially on lands that have not been suitable for farming, is the undivided 160-acre hole which may be neatly covered by a perfect record title in the apparent owner. The 10-year statute of limitation relating to real property in Texas is more favorable to the adverse

*Counsel for Heep Oil Corporation.
†Counsel for Houston Oil Company.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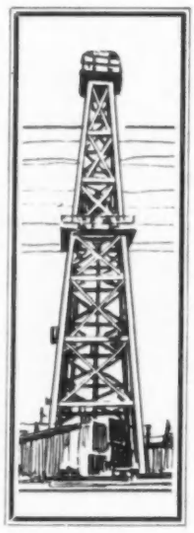
OF THESE "MOVES" WILL YOU MAKE TO REDUCE 1933 OPERATING COSTS?

1. INDUCTION-MOTOR DRIVE FOR DRILLING RIGS . . . rotary or cable-tool. The means of making a substantial reduction in fuel and water bills.
2. DIRECT-CURRENT DRILLING EQUIPMENT with generator voltage control, for rotary rigs. When combined with internal-combustion-engine drive for the generators, it provides all the advantages of this prime mover and of electric power for wildcat drilling where electricity is not otherwise available. Suitable also for operation from any central-station power system, combining the economies of electric power with the flexibility of steam.
3. AUTOMATIC WEIGHT CONTROL . . . the outstanding development in automatic feed for rotary drilling of straight holes. Automatically holds constant weight on the bit, without loss in drilling time. It is notable for its flexibility and versatility; is applicable to any rotary rig.
4. TYPE MTO, TWO-SPEED OIL-WELL PUMPING MOTOR . . . the one type of motor which is suitable for every power need of a producing well. Can be used with every type of rig. Flexible in control — efficient — powerful.
5. MOTORS FOR SLOW-MOTION OR STANDARD PUMPING RIGS . . . gear-motors for slow-motion pumping, double- or triple-rated motors for economical pumping over a wide range of loads, standard motors for specific pumping requirements, hoist motors for pulling rigs — in fact, in the complete line of G-E motors and control, you'll always find exactly the right combination for every pumping job.
6. TOTALLY ENCLOSED FAN-COOLED MOTORS . . . weatherproof if desired. Install them outdoors, or in the dustiest and dirtiest places, or where corrosive fumes are present, and forget them except for an occasional inspection. Reduce maintenance and save the cost of a building.
7. EXPLOSION-PROOF MOTORS AND CONTROL . . . tested and listed by the Underwriters for Class I, Group D, hazardous gas locations. They give reliable protection wherever safety is paramount — for well-pumping rigs, mud-screen drives, gasoline plants, and refineries. They minimize installation and housing expense.
8. G-E STEAM TURBINES . . . always popular for use in refineries, are the logical drive for mud screens used with steam rotary rigs. These compact, dependable drives, which can be used outdoors, are easy to install and economical to operate.
9. PIPE-LINE PUMPING EQUIPMENT . . . the motor-driven centrifugal pump is small and light, hence unequalled for ease in moving to new locations, saving time and expense. As a booster it takes the place of looping the line, or is the efficient means of maintaining constant pressure all the year.
10. ARC WELDERS . . . always valuable as construction or maintenance tools. For erecting oil-storage tanks, repairing breaks, welding pipes, etc., arc welding is *going places* in every division of the oil industry. Before buying any arc-welding sets, investigate the advanced machine which bears the G-E monogram.

Investigate the value of these and other great profit builders offered by General Electric. G-E oil-field and refinery specialists in your nearest G-E office are always willing to render you assistance.

200-369

GENERAL ELECTRIC



Oil was first discovered in Texas in 1866. The First National Bank of Houston was established in the same year. Since then, the development of Texas' oil resources has grown into an industry of major local and national importance, and the state's oil reserves have been proven to be greater than those of any other state. The First National Bank has been privileged to assist in the past development of this rich resource, and it is strategically located in the oil capital of the state to serve the oil industry's present and future expansion.

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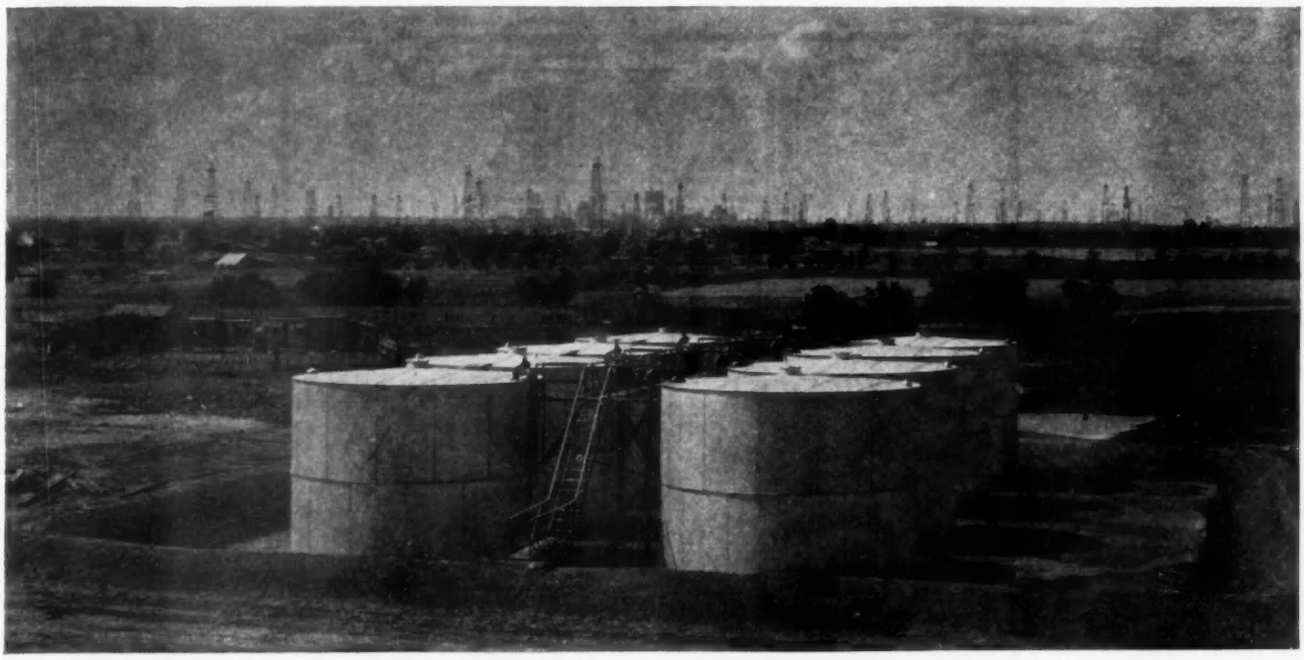
possessor than the limitation statutes of most states. It is only necessary for a squatter to fence, live upon, cultivate, use and enjoy an enclosure of a few acres out of a larger tract and then, when the land becomes valuable through mineral development, recall that years ago, while he was on the tract of land, he was claiming an undivided 160 acres surrounding and including his improvements. There have been recent investigations which have led operators to believe that old mill stones were moved from a small abandoned enclosure in the gas area of the field down to a spot in the woods on top of the oil. The purpose in moving these stones is to shift the location of the land claimed from a place on the surface beneath which there was gas only, and to place same in a location where oil might be found beneath the surface. Under the 160-acre limitation law, the squatter could show that he was claiming a certain 160 acres bounded by certain natural objects, and as he was claiming that these mill stones were one of the corners which he claimed for his 160 acres, the shifting of the mill stones to another location would necessarily shift the 160 acres which he claimed to another location. It is therefore a necessary precaution that a prospective purchaser of a lease or minerals make a thorough investigation regarding claims of persons in possession of the property to be leased or purchased, or in possession of adjoining property. If no persons are in possession, a cruise of the land should be made to determine whether there is any evidence of the land ever having been occupied. In some instances resourceful operators and attorneys have resorted to aerial photographs, taken from an altitude of approximately 12,000 feet, which show evidence of old enclosures, old fields, etc., to a remarkable degree of accuracy.

There seems to be two general lines of decisions in the various states as to the nature of the ownership of oil and gas beneath the surface. Some states hold with Texas that minerals beneath the surface may be owned in fee simple, that is, that the minerals when conveyed separately from the surface rights, whether by lease or mineral deed, convey a fee interest in the land. Kentucky is one of the states holding with Texas on this proposition. Oklahoma and Louisiana are examples of states following the doctrine that such conveyance does not pass a fee interest and the federal courts have adopted this view. The latter states adopted the rule that a lease gives to the lessee a mere right or privilege to explore the land for oil and gas and does not give the lessee vested interest in the land. They hold that oil and gas being migratory in its nature, is analogous to the case of wild animals (animals "frae naturae") and belong to the owner of the land upon or under which they are located. In such states the lessee or grantee under a mineral deed has no vested interest in the land in fee and therefore could not bring a suit of trespass to title to establish his claim to these minerals as could be done in Texas or other states having similar rulings.

While the federal stamp tax mentioned above is so recent as not to have been defined as to its limitations by court decisions, it would seem that in states not recognizing a lease or mineral deed as conveying an interest in the fee, that such lease or mineral deed would not be subject to the stamp tax. Further that the interest conveyed would not be subject to real property tax.

The homestead law is not peculiar to Texas, as many of the states have adopted similar laws. However, a number of states do not have homestead laws and in such states the securing of oil and gas leases and mineral deeds are exempt from the requirements as to homestead.

It would appear that legal advice and aid in completing transactions is needed by operators in the Gulf Coast section more than in any other territory.



Battery of 1000-Bbl. Maloneys—Oklahoma City Field.

MALONEYS MINIMIZE LEASE STORAGE COSTS

MADE OF KEYSTONE AMERICAN COPPER STEEL

Maloney Bolted Steel Flow and Stock Tanks are built to reduce to a minimum both the cost per year for tankage and the cost of evaporation between the well and the pipe line.

Maloneys are manufactured of rust-resistant Keystone Copper Steel, have patented offset seams and joints, and are equipped with efficient Vacuum-Pressure Valves. They are painted inside and out with our own aluminum paint, made with a spar vehicle containing water-proof and alkali-proof Inhiburine. By minimizing lease storage expense, these tanks add appreciably to the net income from the lease.

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Distributers at All Principal Petroleum Points.
Packed in Steel-Bound Crates for Export.

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STAMP of QUALITY

WIRE WRAPPED MILLED GROOVE SCREEN

The Layne Wire Wrapped MILLED GROOVE Screen is the same as our regular plain drilled screen, except there is a vertical milled groove around each hole drilled in the pipe, giving each perforation a countersunk effect at right angles with the screening opening; thereby providing a greater inlet flow of fluid.

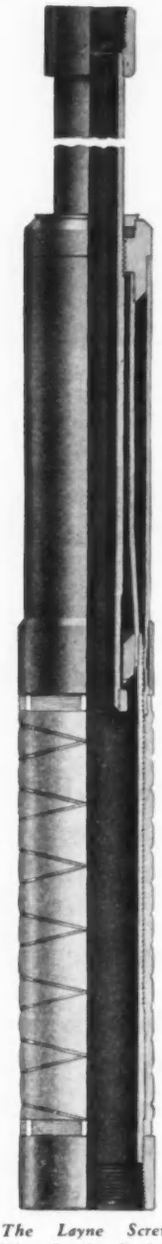
The MILLED GROOVE Screen was put on the market in 1928 and received immediate acceptance by many leading Operators, Contractors and Drillers. Reports of increased production convinces us it is the greatest improvement in screening problems since the Layne Wire Wrapped Screen was first put on the market in 1904.

With various improvements and greatly increased manufacturing facilities, we invite your business, knowing that you will be pleased with the Layne quality — and just as pleased with the service you receive.

SCREW THRU RATCHET PACKER and SETTING TOOL

The improved Screw Thru Setting Tool is a recent perfection for use with the standard Layne Ratchet Packer, furnished with 42″ canvas in the ALL canvas, Lead Cone and canvas or the doubleseal type. This new tool consists of a stem, a barrel, a collapsing bushing and an expanding bushing.

When the packer has been lowered into the well and is ready to set, the setting string is rotated to the right approximately 10 turns. This screws the stem through the collapsing bushing and as the setting string is then lowered, a shoulder on the lower portion of the stem engages with the expanding bushing and forces it out of engagement with the setting tool barrel. This permits the lower end of barrel to contract and disengage from the packer. As the downward movement of the setting string is continued, the collar on top of the stem comes in contact with the top of the collapsing bushing which rests on the top of the packer sleeve and thus the full weight of the setting string is applied to the packer sleeve to force it downwardly and expand the packing.



The Layne Screw Thru Ratchet Packer and Setting Tool.

The LAYNE and BOWLER COMPANY
HOUSTON, TEXAS

The Layne-New York Co., 30 Church St., New York, N. Y.

Layne & Bowler Corp., Los Angeles, Calif.

Vickers Ltd., London, England

Tabular History of Gulf Coast Oil Fields, Salt Domes and Prospects

Data Compiled by JACK LOGAN of the Oil Weekly Staff

Austin County

Prospects

Cat Springs

Location: Centering around J. De Leon Survey, about 1 mi n Cat Springs.
Discovery Data: Sun Oil Company assembled lease block in 1932 following geological work indicated structure 1932. Reflection seismograph did not furnish definite evidence.
Geology: Not determined.
Producing Formations: None.
Extent of Development: Sun Oil Company drilled R. W. Theuman 1, J. De Leon Survey, abandoned January, 1933, in Yegua formation, 4734 ft.
Deepest Hole: See above.
Productive Area: None.
Production History: None.
Principal Lease Holders: Sun Oil Company.

Austin-Waller Counties

Oil Fields

Raccoon Bend

Location: 8 mi. e. Bellville, 7 mi. sw. Hempstead, W. C. White, Wm. Smeathers, M. R. Williams, J. P. Stephenson, T. Bell, Wm. Harvey, Chas. Donoho, J. Bardsley, A. Ives, Austin county and Jared E. Groce, Waller county, surveys.
Discovery Data: Gas seeps, paraffin dirt, broken surface; indications. First production: Humble O & R Co-Valley Oil Corp's Gotoskey 2, Jan. 15, 1928, 500 bbls, 23 gravity, 3259 ft. Valley Oil Corp's Thompson 1, found gas, 1000 ft but was not completed. Humble O & R Co-Valley Oil Corp's Walton 1 was completed as a gas well at 1000 ft, Feb. 1, 1927.
Geology: Dome like structure or fold. Sandstones and clays of the Largarto formation occur at surface. Apparently not a regular salt dome but possibly a deep-seated dome.
Producing Formations: Commercial gas production from 1000 ft considered bottom of Lagarto (Miocene) formation or top of Oakville. Main oil production from Jackson (upper Eocene) formation occuring in 2 zones: Gotoskey sand (basal Fayette) 3100-3200 ft and Grawunder sand (McElroy zone) 3400-3500 ft.
Extent of Development: 199 tests drilled, 126 oil wells, 15 gas wells, 58 dry holes.
Deepest Hole: Humble-Valley's Fritz Lamp 1, Thos. Boatright survey, 4 mi. s of production, abandoned about Oct. 1, 1930, hard sand of Claiborne series, 5411 ft.
Productive Area: Gotoskey sand embraces 2500 acres. Grawunder sand, 1200 acres, lies under the Gotoskey, covering only central portion of field. 1000-foot gas and heavy oil sand extends beyond limits of the 2500 acres in which deeper oil is found.
Production History: Output 1932, 1,771,323 bbls., total output to March 1, 1933, 10,517,489 bbls. On March 1, 1933, 68 oil wells were yielding 4500 bbls daily.
Principal Lease Holders: Humble Oil & Refining Co.
Remarks: A modern pressure-maintenance system is used in producing from the two deeper sands.
Gas piped to Brenham, Hempstead, Prairie View, Navasota.

Proven Salt Domes: No Production

San Felipe

Location: Jno. McFarland, Wm. Cooper, J. Hensley, J. Newman, A. Somerville, B.B.B. & C. Railroad, S. F. Austin A-7 and A-8, and T. Westfall A-99 and A-100 surveys.
Discovery Data: Seismograph, Gulf Production Co., 1927.
Geology: Salt dome. One well topped cap rock at 3218 ft, and a south flank test hit salt at 4755 ft.
Extent of Development: Ten tests drilled, all unproductive, showings of oil encountered, presence of dome confirmed.
Deepest Hole: Empire Gas & Fuel Co's Kunze 1, w flank, in May, 1931, 7200 ft.
Principal Lease Holders: Gulf Production Company, Kirby Petroleum Company, Empire Gas & Fuel Company, Sloan and Gans.
Remarks: Large dome; comparable in size with Boling and Humble.

Austin-Washington Counties

Oil Fields

Brenham

Location: S. M. Williams and J. Hodge surveys. Eight mi sw Brenham.
Discovery Data: Surface elevation, gas seeps. First oil well: Brenham Oil Co's Schurenberg 2, Oct. 8, 1915, 25 bbls., 1450 ft. First shallow oil production: Lamarque Oil Co's Hess 1, 30 bbls, 270 ft, Jan. 9, 1925.
Geology: Salt Dome. Top of cap rock 800 ft; salt 1150 ft.
Producing Formations: Miocene at 190 to 275 ft.
Extent of Development: Approximately 90 wells, 70 oil producers. March 1, 1933, 31 wells, 45 bbls. daily.
Deepest Hole: No deep flank tests undertaken.
Productive Area: Not large.
Production History: 1932 output 20,461 bbls; total to Jan. 1, 1933 257,254 bbls.
Principal Lease Holders: Butler and Calhoun, Conklin et al, Golden Rule Oil Company, Lynne Oil Company.
Remarks: Located farther inland than regular salt domes.

Brazoria-Galveston Counties

Prospects

Halls Bayou

Location: Asa Bringham survey; 9 mi se Alvin.
Discovery Data: Torsion balance, Humble Oil & Refining Company, 1928. Seismograph did not show dome.
Geology: No dome indicated.
Extent of Development: A. H. Parsons et al's J. D. Hughes 1, A. L. D. Lewis survey, abandoned, shale, 4254 ft, January, 1933.
Deepest Hole: 4254 ft.

Brazoria County

Oil Fields

Allen

Location: S. McNeel, J. G. & G. W. McNeel, T. & W. Alley and C. G. Alsberry ½ League surveys. On Bernard River 8 mi n of coast.
Discovery Data: Torsion balance, Shell Petroleum Corporation, 1925. First oil well: Shell's Allen Bernard River 1, May 17, 1927, 700 bbls 31 gravity oil, 5141 ft.
Geology: Salt dome; top of cap rock 822 ft, salt 1380 ft.
Producing Formations: Miocene sands, 4346 to 5584 ft.
Extent of Development: 39 tests, 7 oil wells and 32 dry.
Deepest Hole: Roxana (Shell) Petroleum Corporation's Poole A-2, abandoned in shale, 5960 ft.
Productive Area: Not established.
Production History: 1932 output 5,079 bbls, total to Jan. 1, 1933, 68,726 bbls. March 1, 1933, one well, pumping around 11 bbls.
Principal Lease Holders: Mills Bennett Production Company.
Remarks: Like Barbers Hill, High Island, and some others, Allen dome has "mushrooming" or "overhanging" cap.

Tabular History of Gulf Coast Oil Fields, Salt Domes and Prospects

Brazoria County

Oil Fields—(*Continued*)

Damon Mound

Location: Dome is under town of Damon, Abraham Darst, Jno. P. Mills, and C. P. Patton surveys.

Discovery Data: Elevation, gas seeps, and mineral waters. First oil well: Texas Exploration Co.'s Wisdom 1, Nov. 15, 1915, 100 bbls, 1953 ft.

Geology: Salt dome: top of cap rock at surface, salt 529 ft.

Producing Formations: At 1450 to 3800 ft, in Pliocene, Miocene, Oligocene and Lower Oligocene formations.

Extent of Development: 246 wells drilled, 108 oil producers, 138 dry holes.

Deepest Hole: Cullen & West's Ward 1, abandoned, 4506 ft in heaving shale.

Productive History: 1932 output 236,453 bbls, total to Jan. 1, 1933, 8,724,141 bbls. March 1, 1933, 29 wells yielding 650 bbls. daily.

Principal Lease Holders: Sinclair Prairie Oil Company, Layne-Texas Company, Cullen & West, Humble Oil & Refining Company, D. J. Harrison, Gulf Production Company.

Pledger

Location: 3 mi. se Pledger, W. Carson survey.

Discovery Data: Reflection seismograph discovery, Petty Geophysical Engineering Corp., J. P. Hunnicutt, H. H. Stevenson, Houston, Pierce Withers, Wharton, June, 1932. First production: Danciger O & R Co's W. S. Hunt 1, Nov., 1932, 7 mcf gas, 30 bbls., high gravity oil, 6782 ft.

Geology: Evidence of salt dome; no cap rock or salt in test drilled.

Producing Formations: First test regarded as producing from lower Oligocene sand.

Extent of Development: Danciger rigging for second test, March, 1933.

Deepest Hole: Only one well, see above.

Productive Area: Not defined.

Production History: March 1, 1933, one well producing 30 barrels daily.

Principal Lease Holders: Danciger Oil & Refining Company controls 3350 acres.

Remarks: Danciger has surveyed field into 20-acre units. planning to develop on unit basis: 1 well to 20 acres.

Manvel

Location: Two mi ne Manvel in Harry Little and Thos. Spragin surveys.

Discovery Data: Torsion balance, discovery, The Texas Company, 1929; seismograph confirmed a deep dome. First production: The Texas Co.'s Belcher 1, Sept. 9, 1931, flowing 2000 bbls 28 gravity oil, 5481 ft.

Geology: No cap rock or salt encountered; regarded very deep seated salt dome.

Producing Formations: Oil from Miocene sand at 3890-4009 ft (two wells) and Middle Oligocene at 5460-5685 (two wells). Deep test yielded non-commercial gas from McElroy formation (Jackson) at 7450-7590 ft.

Extent of Development: 6 tests drilled, all but the first productive. Two being drilled.

Deepest Hole: The Texas Company's O. F. Ewing 1, abandoned April, 1931, 7648 ft, after yielding some gas at that depth from McElroy formation.

Productive Area: Not established.

Production History: 1932 output 161,000 bbls, total to Jan. 1, 1933 236,307 bbls. March 1, 1933, 4 wells yielding less than 1000 bbls daily.

Principal Lease Holders: The Texas Company controls large proportion of promising acreage. Alpha Petroleum Company and Burton Drilling Company, each drilling at the middle of March, 1933.

Stratton Ridge

Location: 7 mi se Angleton.

Discovery Data: surface elevation, gas seeps, and sulphur water indications. First production: Freeport Sulphur Co.'s Dannenbaum 1, May 12, 1922, 150 bbls, 4346 ft.

Geology: Salt dome. Several false caps; salt top around 1300 ft.

Extent of Development: 70 tests, all but a few being dry.

Deepest Hole: Rycade Oil Corp. and Amerada Petroleum Corporation's Seaburn 2, abandoned May, 1931, 7624 ft in shale.

Production History: 1932 output 560 bbls, total to Jan. 1, 1933, 18,060 bbls, with only previous production in 1922, 1923 and 1924. On March 1, 1933, one well, yielding 6 bbls daily.

Principal Lease Holders: Rycade Oil Corporation, Gulf Production Company, Empire Gas & Fuel Company.

Remarks: In 1930 salt found at a relatively shallow depth off the east flank of the dome as previously outlined gave indication that twin domes exist or that the salt plug is a large saddle type dome.

West Columbia

Location: Adjoins town of West Columbia on northwest, Geo. Tennille, M. Varner, and J. H. Bell surveys.

Discovery Data: Surface elevation and gas seeps led to drilling for oil. First production: Tyndall-Wyoming Oil Co.'s Hogg 1, Sept. 7, 1915, 6 bbls, 2900 ft.

Geology: Salt dome: top of cap rock 700 ft, salt 800 ft.

Producing Formations: At 600-1300; 2700-3250; and 3850-3975 ft, in Miocene, Oligocene and Lower Oligocene formations.

Extent of Development: 469 tests completed, including 266 oil producers and 203 dry.

Deepest Hole: Continental Oil Co.'s Hogg 1, abandoned in December, 1929, at 6270 ft.

Productive Area: Approximately 375 acres.

Production History: 1932 output 1,332,915, total to Jan. 1, 1933, 75,648,294 bbls. March 1, 1933, 39 oil wells producing around 3200 bbls daily.

Principal Lease Holders: The Texas Company, Humble Oil & Refining Company, Gulf Production Company, Sinclair Prairie Oil Company.

Remarks: Ranks as a leader among Gulf Coast fields in recovery per acre.

Sulphur Fields

Bryan Heights

Location: 2 mi sw Freeport.

Discovery Data: Elevation, gas seeps and sulphur water. First production: J. M. Guffey Petroleum Co.'s No. 1, 1901, gas well 6,000,000 cut ft daily at 900 ft.

Geology: Salt dome: top of cap rock 700 ft; salt 1136 ft.

Producing Formation: Sulphur from cap rock.

Extent of Development: 15 tests have been drilled in search of oil, none proving successful.

Production History: Sulphur production, no oil.

Principal Lease Holders: Freeport Sulphur Co.

Remarks: During 1914 Freeport Sulphur Company began commercial sulphur mining, which is still being carried out. Field has not had any oil production.

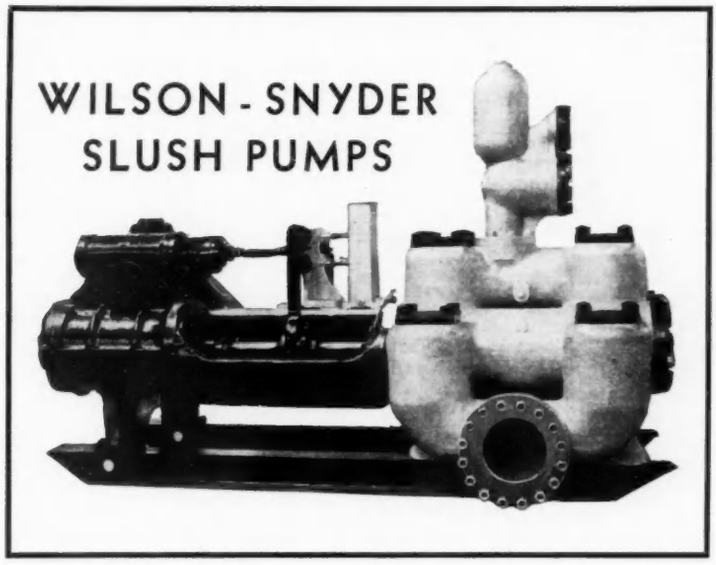
Hoskins Mound

Location: Eight mi se Danbury, Henry Austin and J. J. Calvington surveys.

Discovery Data: Surface elevation, gas seeps, and sulphur water led to drilling for oil. First well in area, drilled by Mound Oil Co. in 1904, yielded gas at 585 ft, and same company from 1904 to 1907 drilled 13 wells which during that period produced approximately 30,000 barrels of oil. Commercial sulphur production was started in May, 1925, by Freeport Sulphur Co. on leases in which The Texas Company owns an interest; and the field continues as strictly a sulphur field.

The most popular pump in the Oil Fields

WHY?



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First.—They were designed and are manufactured by pump builders of over 50 years experience.

Second.—They were the first heavy duty long stroke pump offered the oil industry.

Third.—They have been constantly improved without changing parts. Parts manufactured for the latest design pump can be used in the earlier models. There are no obsolete parts to be junked, as is the case with most other pumps.

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OIL and GAS WELL SUPPLIES

BRANCHES
Barbers Hill, Kilgore, Joinerville, Gladewater, Conroe, Texas, and Shreveport, La.

Tabular History of Gulf Coast Oil Fields, Salt Domes and Prospects

Proven Salt Domes: No Production

Clemens

Location: 4 mi s of Brazoria, R. Cummings, T. Bell, and Jno. McNeel surveys.

Discovery Data: Torsion balance discovery, Shell Petroleum Corporation, 1925. Area had previously given promise through surface evidence.

Geology: Salt dome: top of cap rock 590 ft; salt 1400 ft.

Extent of Development: 15 tests drilled, all unproductive, although giving information on outline of the dome.

Deepest Hole: Roxana (Shell) Petroleum Corporation's Pabst 2-A, abandoned, October, 1927, at 6319 ft.

Principal Lease Holders: Shell Petroleum Corporation's leases cover most of prospective producing area.

Danbury

Location: 1 mi ne of Danbury, H. T. & B. No. 13 and No. 14, S. A. Towsey, M. Shepard, J. H. Bruner, H. Austin Leagues No. 5 and No. 6 surveys.

Discovery Data: Seismograph discovery, Shell Petroleum Corporation, 1929. Area had also given promise earlier through surface indications.

Geology: Salt dome: top of salt 5221 ft.

Extent of Development: Six tests, unproductive commercially, although one yielded some 22 gravity oil from sand at 1577 ft, along with salt water, and later showed gas at 4823 ft.

Deepest Hole: Shell Petroleum Corporation's Blakely-Winston 1, abandoned at 5255 ft in May, 1930. (This was the well which had above mentioned showings.) Four tests were less than 2400 ft deep.

Principal Lease Holder: Shell Petroleum Corporation.

Austin Bayou

Location: Henry Austin survey, Abstract 10, 3 mi s Danbury dome.

Discovery Data: Torsion balance prospect, Rycade Oil Corporation and Amerada Petroleum Corporation, 1930.

Extent of Development: Rycade and Amerada drilled one well, Rapid City 1, junking and abandoning hole at 6248 ft in August, 1930. It failed to give encouragement for further drilling. It was drilled on strength of torsion balance work. Area was worked later by seismograph by same interests and condemned.

Bonney

Location: Adjoins town of Bonney on east, in S. F. Austin and Warren D. C. Hall surveys.

Discovery Data: Barnsdall Oil Co. took leases in 1932 in consequence of geophysical work. Prospect is undrilled.

Clute

Location: J. E. Groce survey, 2 mi ne Clute.

Discovery Data: Seismograph, Rycade Oil Corporation and Vacuum Oil Company, 1930.

Extent of Development: Rycade and Vacuum made location for Wisdom 1 in summer of 1930, following seismograph work which suggested presence of a salt dome. The prospect was re-worked by seismograph, however, and since that work failed to show a dome the location which had been made was abandoned.

Remarks: Also referred to sometimes as Lake Jackson prospect.

Devils Elbow

Location: 3 mi e Brazoria, in S. F. Austin 5½ League survey.

Discovery Data: Surface indication in form of pronounced river bend and gas seeps. Also checked geophysically, and McCollum Exploration Co., using seismograph and torsion balance, reported favorably on prospect in 1928, although it did not show up definitely as a salt dome.

Extent of Development: No drilling has been undertaken on geophysical evidence, but Croesus Oil & Gas Co. drilled Jenkins 1 to 3050 ft and Jenkins 2 to 3500 ft.

Deepest Hole: 3500 ft.

Eagle Nest Lake

Location: Just s of Eagle Nest Lake, Austin survey, 3 mi ne West Columbia dome.

Discovery Data: Surface evidence (gas in water well). Checked by geophysics, including Gulf Production Co. torsion balance in 1931.

Extent of Development: Still undrilled.

Remarks: Gulf took big block of leases in 1932. Most companies which have done work in area agree this is a favorable prospect.

Lockwood

Location: Midway between Damon Mound and West Columbia salt domes, Wiley Martin and J. Thompson surveys.

Discovery Data: Gulf Production Co. and Humble Oil & Refining Co. found promising evidence by geophysics about 1932.

Extent of Development: Gulf Production Co.'s Lockwood 1, Wiley Martin survey, abandoned in water sand at 7405 ft, January, 1933.

Deepest Hole: 7405 ft.

Principal Lease Holders: Gulf Production Co., and Humble Oil & Refining Co. have extensive lease-holds.

Peach Point

Location: 5 mi nw Freeport.

Discovery Data: Old shallow wells, drilled on surface indications, had oil and gas showings. Prospect was checked by geophysics, Humble Oil & Refining Co. seismograph showing it up favorably, as did seismograph surveys of some other companies.

Extent of Development: Humble Oil & Refining Co. and others drilled shallow wells. No drilling since geophysical surveys.

Sandy Point

Location: West portion Edward R. Bradley and Andrew Robinson surveys, 4 mi sw Sandy Point.

Discovery Data: Gulf Production Company torsion balance in 1929 gave evidence of pronounced minimum. Geophysics by other companies also showed prospect as promising.

Extent of Development: Gulf Production Co.'s American National Insurance Co. 1, Edward R. Bradley survey, abandoned in shale at 6695 ft, January, 1933. W. D. Southerland et al's C. W. Chapman 1, Andrew Robinson survey, had oil shows at 3280 ft and 5220 ft, abandoned in sand at 5787 ft in February, 1933.

Principal Lease Holders: In addition to Gulf, companies which have leases include Sun Oil Company, Magnolia Petroleum Company (Vacuum), Humble Oil & Refining Company and Sinclair Prairie Oil Company.

Chambers County Oil Fields

Barbers Hill

Location: Centers around town of Mont Belvieu. In H. Griffith, Wm. Hodge, Wm. Bloodgood and W. D. Smith surveys.

Discovery Data: Pronounced mound at surface, gas seeps, paraffin dirt, and sulphur water. First produc-

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tion: Gulf Prod. Co.-Humble Oil & Refining Co.'s Chambers County Agricultural Assn. 4, April 16, 1916, 40 bbls, 1571 ft.

Geology: Salt dome: top of cap rock 350 ft; salt 1000 ft.

Producing Formations: Small production from considerable number of oil wells completed in cap rock and Pliocene-Miocene sands at 800 to 2200 ft; half dozen oil wells at 3450-3650 ft; several oil wells at 3750-3800 ft; over 30 oil wells produced from Middle Oligocene at 4124-4520 ft; about 225 oil wells from Middle Oligocene at 4666-4819 ft; one well at 6000-6182 ft; half dozen oil wells from Frio at 6320-6690 ft; one well yielded little oil from Lower Oligocene at 7130-7296 ft.

Extent of Development: 400 tests drilled, 336 oil producers, 64 dry holes.

Deepest Hole: Yount-Lee Oil Co.'s Chambers Co. Agricultural Assn. 4, abandoned 8150 ft, September, 1929.

Productive Area: 700 acres considered proven but only 250 acres actually being produced from.

Production History: 1932 output 7,458,145 bbls, total to Jan. 1, 1933, 29,448,922 bbls. On March 1, 1933, 150 wells producing 23,000 barrels daily.

Principal Lease Holders: Texas Gulf Producing Company, Mills Bennett Production Company, Humble Oil & Refining Company, Gulf Production Company, Yount Lee Oil Company, Sun Oil Company, Sinclair Prairie Oil Company, The Texas Company, Republic Production Company, McAlbert Oil Company, Superior Oil Company, D. B. McDaniels, Rio Bravo Oil Company.

Remarks: On nearly all sides the salt dome flares out at the top, giving a mushroom-like effect, and wells drill through "overhang" of the cap rock and salt, back into sedimentary formations, and are completed as oil producers.

Lost Lake

Location: 5 mi e Barbers Hill dome and about 7 mi nw Anahuac.

Discovery Data: Dome found by Pure Oil Company seismograph in 1927. It had been indicated previously as a minimum by Roxana (now Shell) Petroleum Corporation in 1925, but that company condemned the prospect after a 3700-ft test slightly north of the dome failed to give encouragement. First production was from Pure's Mayes 1, which came in March 30, 1929, as gas well at 2701 ft. Mayes 2 was discovery oil well, coming in Aug. 1, 1929, flowing 200 bbls 23 gravity oil daily at 2748-82 ft.

Geology: Salt dome: top of cap rock 3272 ft; salt 5430 ft. This dome has the greatest thickness of cap rock known along the Gulf Coast.

Producing Formations: Oligocene sands (lenticular) around 2800 ft.

Extent of Development: 26 tests drilled, 10 oil producers, one gas, 15 dry.

Deepest Hole: Pure's Lost Lake 5, abandoned in February, 1931, 7461 ft in cap rock which had been logged first at 5136 ft.

Production History: 1932 output 127,181 bbls; total to Jan. 1, 1933, 536,861 bbls. Early March, 1933, 9 wells, 300 bbls.

Principal Lease Holder: Pure Oil Company.

Remarks: Had early notice through gas seeps.

Prospects

Anahuac

Location: 6 mi ne Anahuac, James McGahey survey.

Discovery Data: Humble Oil & Refining Co., geophysics induced leasing in 1932.

Cove

Location: Chas. Tilton and W. H. Hodges surveys, 3 mi e Barbers Hill dome.

Discovery Data: Seismograph prospect of Pure Oil Co. found in 1930.

Extent of Development: One test, Pure Oil Co.'s Kirby 1, Chas. Tilton survey, abandoned in shale, 6669 ft, July, 1930. Slight show of oil was reported around 5920 ft.

Jackson Lake

Location: 10 mi s Anahuac.

Discovery Data: Humble Oil & Refining Company took leases following geophysical work, 1929. No drilling has been done.

Oyster Bayou

Location: 5 mi w High Island, Robt. Oliver survey.

Discovery Data: Seismograph prospect, Pure Oil Co.-Rycade Oil Corp., 1929.

Extent of Development: Pure-Rycade's Jackson 1, Robt. Oliver survey, abandoned in October, 1930, 6738 ft, shale; no shows had been reported. Superior Oil Co.'s H. Jackson 1, 1½ mi to east of Levi Barrow survey, abandoned August, 1930, at 4382 ft, having had a slight oil show at 3860 ft.

Plummer

Location: 5 mi e Hankamer field, F. W. Plummer survey No. 28.

Discovery Data: Geophysical prospect, Yount-Lee Oil Company, 1932.

Extent of Development: One test, Yount-Lee Oil Co.'s Plummer 1, F. W. Plummer Survey No. 28, abandoned January, 1933, 9344 ft in shale; no interesting showings were reported.

Deepest Hole: 9344 ft.

Remarks: Above mentioned test is deepest hole (as of March 15, 1933) ever drilled along Texas-Louisiana Gulf Coast.

Salt Cedars

Location: Sections 15, 16, 17, 18, and 19, T. & N. O Survey, 7½ mi w and little n of High Island.

Discovery Data: Torsion balance prospect, The Texas Company, 1928.

Extent of Development: One test, The Texas Co.'s Jackson 1, abandoned in shale, 5010 ft, September, 1930.

Remarks: This prospect and the Oyster Bayou prospect, several miles to the southeast, are regarded by some as really one and the same. Area was worked first by Roxana (Shell) Petroleum Corp. with torsion balance and then with seismograph; and by Petty Geophysical Engineering Corporation with torsion balance. The Texas Company dropped leases after drilling above mentioned well.

Smith's Point

Location: Edward Branch survey, 15 mi s and w of Anahuac, where land juts out into Galveston Bay.

Discovery Data: Seismograph prospect, Humble Oil & Refining Company, 1928. No drilling has been done, although considered good salt dome prospect.

Colorado County

Oil-Gas Fields

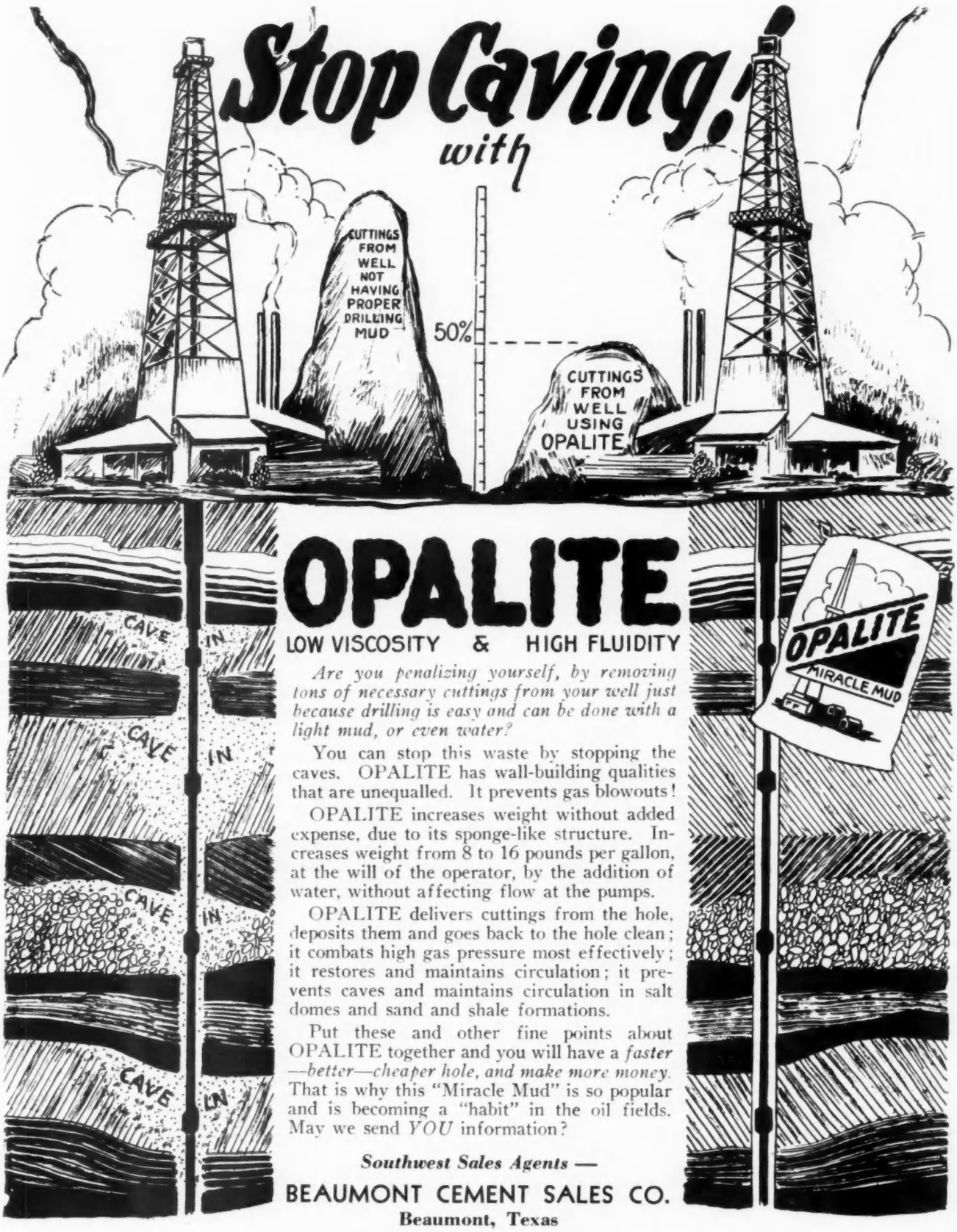
Coyle-Concord

Location: I. & G. N. Railroad Survey, Sections 41, 42, 43, 44, 45, about 10 mi s Rock Island, and 7 mi w Garwood.

Discovery Data: Surface indications. First production: Coyle-Concord Oil Co.'s Nelson 1, Section 43, was completed July 17, 1932, rated as 80 million cubic foot gas well, with spray of high gravity oil, from sand at 4021-4052 ft. Had closed in pressure of 1600 pounds.

Geology: Believed very deep seated salt dome; no cap rock or salt has been reached.

Extent of Development: Prior to completion of discov-



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ery well only three tests had been drilled, all by the discovery company, and all around 1500 ft deep.
Deepest Hole: Discovery well: see above.
Productive Area: Not determined.
Principal Lease Holders: Coyle-Concord Oil Co., Plymouth Oil Co. and Humble Oil & Refining Co.
Remarks: Aside from surface work, the prospect was worked, prior to completion of discovery well, by torsion balance and magnetometer. Late in 1932 Humble Oil & Refining Company acquired an undivided half interest in the seven-eighths mineral lease on Coyle-Concord's 15,600 acres, and will operate the property, now drilling first well on the joint holdings.

Prospects

Alleyton

Location: R. Alley and J. Crosky surveys.
Discovery Data: Surface indications checked by seismograph and torsion balance (1930), by Humble Oil & Refining Co. and Gulf Production Co.
Geology: Not believed to be a regular salt dome, but considered to have possibilities of being a folded type structure, like Raccoon Bend, 25 mi northeast.
Extent of Development: Rich Oil Corporation drilled a 1350-ft well about 1 mi e Alleyton, and two tests 2½ mi w Alleyton, one of latter to 2825 ft. In August, 1930, Gulf-Humble-Penn abandoned Hugh Wilson 1, 1½ mi se Alleyton, at 4701 ft, having had gas show around 4200 ft.

Altair

Location: Immediately s of Altair, in C. Winfree, W. J. Jones, G. Looney, Whiting-Osborne surveys.
Discovery Data: Surface evidence. Marland Oil Co., seismograph used in 1925; Humble Oil & Refining Co. and Gulf Production Co. torsion balance later. Also Humble core tested after surface work.
Geology: Structure rather than salt dome type.
Extent of Development: Latest test was Pilot Oil Co.'s Tait 1, Cook & Dewees survey, 1½ mi n Altair, abandoned at 5025 ft, without showings. Humble did extensive core drilling, mostly to south of Altair, but including some test to the north.
Deepest Hole: 5025 ft.

Northeast Alleyton

Location: Between Alleyton and Cat Springs, J. W. Martin, John Hennecke surveys.
Discovery Data: Surface work checked by geophysics, about 1929.
Geology: Structure rather than salt dome type.
Extent of Development: Only deep test of area was Bunte and Shell Petroleum Corp.'s R. Matuska 1, Jno. Hennecke survey, abandoned in shale at 4710 ft in Oct. 1932, no showings. Over half dozen shallow tests have been drilled by Shell, The Texas Co. and Humble Oil & Refining Co.

Fort Bend County

Oil Fields

Big Creek

Location: 6 mi se Rosenberg, Barnabas Wickson and Michael Young surveys.
Discovery Data: Gas seeps and sulphur water indications. First production: Gulf Production Co.'s Wheat 1, May 10, 1922, 150 bbls, 580 ft.
Geology: Salt dome: top of cap rock 450 ft; salt 650 ft. One of latest Gulf Coast domes found without aid of geophysics.
Producing Formations: Middle Oligocene sands around 800 ft and Lower Oligocene sands at 2700 to 4200 ft.
Extent of Development: 107 tests drilled, 57 oil producers and 49 dry.
Deepest Hole: Gulf's Davis 58, abandoned in heaving shale at 4629 ft, June, 1930.
Production History: 1932 output 425,952 bbls, total to Jan. 1, 1933, 7,366,169 bbls; March 1, 1933, 11 producing wells yielding about 1100 bbls daily.
Principal Lease Holders: Gulf Production Co., Navarro Oil Co., Benedum Trees Oil Co., The Texas Co.

Blue Ridge

Location: 3 mi se Missouri City; H. Shropshire, Thos. Habermacher, E. Drew, J. Poitevent No. 3, and Jno. Lafayette surveys.
Discovery Data: Elevation and gas seeps. First production: Gulf Production Co.'s Blakely C-2, Apr. 4, 1919, 1200 bbls, 2705 ft.
Geology: Salt dome. Top of cap rock 143 ft, salt 300 ft.
Producing Formations: Miocene and Oligocene sands at 2000 to 4400 ft.
Extent of Development: 280 tests drilled, 157 oil producers, 123 dry.
Deepest Hole: Sinclair Oil & Gas Co.'s Blakely 1, abandoned in salt water at 6189 ft, July, 1930.
Production History: 1932 output 350,573 bbls, bringing total Jan 1, 1933, to 8,543,567 bbls; March 1, 1933, 34 wells had output of around 1050 bbls daily.
Principal Lease Holders: Gulf Production Co., The Texas Co., Sinclair Prairie Oil Co., Navarro Oil Co., San Jacinto Oil Co., Texas Gulf Producing Co., J. S. Abercrombie, H. R. Cullen, Fort Bend Oil Co., Watts Bros., Cunningham Production Co., Moody Corp.

Orchard

Location: 1 mi s town Orchard; James Frazier, L. Burknap, Mark Smith, German Emigration Co., David Scott surveys.
Discovery Data: Seismograph discovery, Gulf production Co., 1924. First oil well: Gulf's Moore 5, Jan. 18, 1926, flowed 2000 bbls 34.5 gravity oil daily at 3702 ft. (Seismograph work was done for Gulf by the "Seismos" G.m.b.H. of Hanover, Germany, directed by Dr. L. Mintrop).
Geology: Shallow salt dome, top of cap rock 285 ft; salt 375 ft.
Producing Formations: Middle and Lower Oligocene sands at 2800 to 4100 ft; little production from cap rock.
Extent of Development: 35 tests drilled, 20 oil producers, 15 dry.
Deepest Hole: Gulf's Moore 19, s flank test, abandoned in November, 1929, at 6756 ft.
Productive Area: Not defined.
Production History: 1932 output 486,500 bbls, total to Jan 1, 1933, 1,797,342 bbls; March 1, 1933, 8 wells producing around 1300 bbls daily.
Principal Lease Holders: Gulf Production Co., controls dome through leases on Moore land.
Remarks: First seismograph discovery on Gulf Coast, work done by "Seismos" G.m.b.H., Hanover, Germany, directed by Dr. L. Mintrop.

Rabb Ridge

Location: 2½ mi s Thompsons and 13 mi se Richmond. Centers on Jno. Rabb survey, and extends into Samuel Kennedy and Robert Peebles surveys.
Discovery Data: Surface elevation caused first interest, and several years before opening of field torsion balance work revealed anomaly, which was not classed definitely however as a salt dome. First well drilled after the geophysical work, Gulf Production Co. and Cullen & West's Lockwood & Sharp A-1, was completed May 21, 1931, flowing 400 bbls 24.5 gravity oil through choke from 3057-3089 ft.
Geology: Considered deep salt dome, no cap rock or salt reached.
Producing Formations: Four Miocene sands at 3050 to 4000 ft: small production in several wells, most of which have been deepened. Main pay Oligocene sand at 5100-5400 ft, yielding 25 gravity oil.
Extent of Development: 82 tests drilled, 77 oil wells, 2

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dry, three holes junked or cratered due to gas blowouts while drilling.

Deepest Hole: Humble-Gulf's J. H. P. Davis 3, s flank, field, abandoned, November, 1932, in shale, 6829 ft.

Productive Area: Approximately 2500 acres.

Production History: Produced 800,200 bbls in 1931 and 4,194,140 bbls in 1932, bringing cumulative production to 4,994,340 bbls. On Feb 1, 1933, 64 wells had daily output around 9250 bbls.

Principal Lease Holders: Gulf Production Co. and Humble Oil & Refining Company, operating jointly on 50-50 basis, control nearly whole field; The Texas Company.

Sugarland

Location: 5 mi se Sugarland, in Wm. Stafford, Wm. Little and E. Alcorn surveys.

Discovery Data: Surface indications and logs of old wildcats. Early seismograph shooting, in search of shallow domes, missed Sugarland. But North American Exploration Co. found it by torsion balance for H. C. Cockburn, who later turned leases to Humble Oil & Refining Co., which in meantime confirmed dome by seismograph. First test drilled, Humble's Sugar Land Industries 1, established production March 26, 1928, 800 bbls 28 gravity oil, 3536 ft.

Geology: Salt dome: top of cap rock 3500 ft; salt 4280 ft.

Producing Formations: Middle Oligocene sand at 2900-3900 ft: blanket or sheet sand spread unbroken over dome, lending itself well to the pressure maintenance program employed in field.

Extent of Development: 75 tests, 64 oil producers, 2 gas, and 7 dry.

Deepest Hole: Humble Oil & Ref. Co.'s S. C. Deatherage 1-B, 4460 ft.

Productive Area: Approximately 1160 acres.

Production History: 1932 output 3,485,606 bbls, total to Jan. 1, 1933, 16,303,549 bbls; March 1, 1933, 37 wells, 7500 bbls daily.

Principal Lease Holder: Humble Oil & Refining Co.

Remarks: At time of discovery Sugarland was a relatively deep dome, stimulated in search for deeper domes along Gulf Coast.

Sulphur Field

Long Point

Location: 6 mi e Needville.

Discovery Data: Torsion balance discovery, Gulf Production Co., 1924, geophysical work being done for Gulf by North American Exploration Company. First oil production: Dec. 15, 1928, Gulf's Wolf 13, 100 bbls, 50 per cent oil, daily at 600 ft. Texas Gulf Sulphur Company began operating sulphur mining plant in March, 1930.

Geology: Salt dome: Top of cap rock 550 ft; salt 930 ft.

Producing Formations: Sulphur produced from cap rock.

Extent of Development: 50 test, mostly shallow, no commercial oil production. Texas Gulf Sulphur Co. held sulphur rights on the Gulf leases, and began sulphur mining in March, 1930.

Deepest Hole: Gulf's Trone 12, abandoned November, 1929, in heaving shale at 6250 ft.

Production History: Small oil production not recorded; commercial production sulphur.

Principal Lease Holders: Gulf Production Company; sulphur rights sub-leased to Texas Gulf Sulphur Company. First actual discovery in Coast area credited to torsion balance.

Prospects

Beasley

Location: 3 mi w Rosenberg; Lester E. Cross survey 20.

Discovery Data: Indicated by torsion balance of Meyer & SoRelle for Gulf Production Co., about 1929, showing up as a minimum; also indicated by Humble Oil & Refining Co., torsion balance. This proved an anomaly that did not show up through seismograph work.

Extent of Development: One test, Humble's Miller 1, abandoned in shale at 5325 ft.

Deepest Hole: 5325 ft.

Clodine

Location: 2½ mi sw Clodine.

Discovery Data: Indication of a salt dome given by Gulf Prod. Co. torsion balance in 1929; also indicated later with detailed seismograph work. The geophysical evidence has not been confirmed so far, however, by drilling.

Geology: Indicated salt dome.

Extent of Development: Two tests, no showings.

Deepest Hole: 6050 ft.

Needville

Location: About 1½ mi se Needville, H. & T. C. Survey 25.

Discovery Data: Torsion balance prospect (a very large minimum), found first by Meyer & SoRelle in 1928, and checked by other companies. Seismograph found no indications, suggesting no dome unless very deep.

Geology: One torsion balance test showed structure as fault rather than salt dome.

Extent of Development: 2 tests, one salt water, one dry.

Deepest Hole: Cullen & West et al, Hartfield 1, 6890 ft.

Remarks: Geophysical work suggested by surface elevation.

Pilant Lake

Location: 3 mi s Rabb Ridge field, adjacent Pilant Lake, Wm. Barrett and Abner Harris surveys.

Discovery Data: Surface evidence; Pure Oil Co. torsion balance in 1929 gave promise.

Geology: Seismograph does not show dome.

Extent of Development: 3 tests, dry.

Deepest Hole: Lowrie & Young et al's Jackson 1, March, 1933, 5830 ft.

Principal Lease Holders: Pure Oil Co., Gulf Production Company.

Richmond

Location: 4 mi e Richmond, Joseph Kukendall survey.

Discovery Data: Geophysics, Grayburg Oil Co., 1929.

Extent of Development: One test, abandoned in salt water sand; no show reported.

Deepest Hole: Grayburg's R. F. Ransom 1, 4335 ft.

Smithers Lake

Location: 3 mi w Thompsons, in L. Smither, Edward Jeffery, Henry Jones surveys, adjacent to Smithers Lake.

Discovery Data: An old prospect, based on gas seepages and topography. Work was done about 1928 with both seismograph and torsion balance, casting doubt on importance of prospect. It is undrilled.

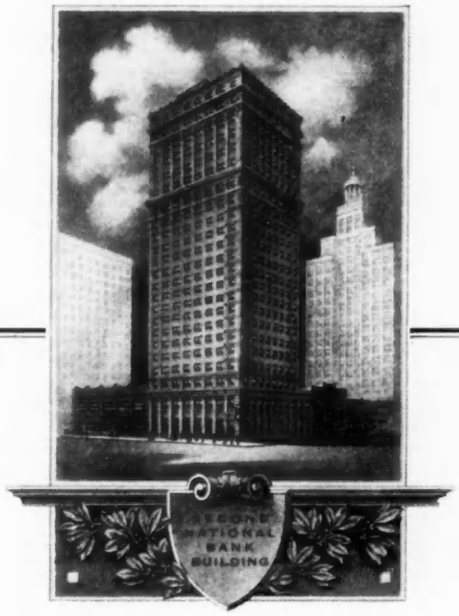
Fort Bend-Brazoria Counties

Oil Fields

Nash

Location: 4 mi e Damon, in H. N. Cleveland and Thos. Allsberry surveys.

Discovery Data: Elevation, gas seeps, and sulphur water. Dome verified by Rycade Oil Corp. by torsion balance,



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Houston, Texas

1923. First production: Rycade's Nash 5, Jan. 2, 1926, 500 bbls., 4127 ft.

Geology: Salt dome: top of cap rock 625 ft; salt 950 ft.

Producing Formations: Miocene sands, 3700 to 4700 ft, and Lower Oligocene, 5644 to 5677 ft.

Extent of Development: 75 tests drilled, 28 oil producers, 47 dry.

Deepest Hole: Harrison & Abercrombie's Nash 15, abandoned February, 1932, in shale, 6800 ft.

Productive Area: Not determined.

Production History: 1932 output 52,464 bbls; total to Jan. 1, 1933, 1,505,961 bbls; March 1, 1933, 4 wells, 200 bbls daily.

Principal Lease Holders: Harrison & Abercrombie; took over holdings formerly operated by Rycade Oil Corp.

Prospects

Fresno

Location: At town of Fresno, C. Heywood and M. Escalera surveys.

Discovery Data: Torsion balance prospect, The Texas Co., 1930.

Extent of Development: Two tests drilled. The Texas Co.'s J. H. Murdock 1, Chas. Heywood survey, was abandoned in January, 1931, in sandy shale at 7556 ft, no oil or gas showings. John Deering and Benedum Trees Oil Co.'s Westenfield 1, M. Escalera survey, abandoned in February, 1933, in shale at 6230 ft.

Remarks: Although torsion balance results were such as to induce drilling, seismograph did not show dome.

Galveston County

Oil Fields

High Island

Location: Martin Dunman and Nicholas Fitzsimmons surveys.

Discovery Data: Surface elevation, gas seeps and mineral waters. First production: Sun Oil Co.'s Cade 4, Oct. 28, 1922, 70 bbls, 2250 ft.

Geology: Salt dome, cap rock at 130 ft; salt 1300 ft.

Producing Formations: Cap rock at 1500 ft, few wells. Miocene sand at 3625-3766 ft; Miocene sand at 4487-4521 ft; Miocene sands at 5022-6275 ft.

Extent of Development: 149 tests drilled, 51 oil producers, 98 dry.

Deepest Hole: Yount-Lee Oil Co.'s Broussard 2, 6322 ft, and then plugged back to make producer.

Productive Area: Not defined.

Production History: 1932 output, 1,507,926 bbls, total to Jan. 1, 1933, 3,050,291 bbls; March 1, 1933, 27 wells, 5200 bbls daily.

Principal Lease Holders: Yount-Lee Oil Co.

Galveston County

Prospects

Greens Lake

Location: 4 mi s Hitchcock, S. A. White survey.

Discovery Data: Humble Oil & Refining Co. torsion balance prospect, 1928; favorable indications by seismograph.

Extent of Development: One test, not completed.

Deepest Hole: 7100 ft.

Principal Lease Holders: Humble.

Remarks: Humble commenced drilling first test, Elias V. Rosenkranz 1, in summer of 1932, and at middle of March, 1933, well was standing at 7100 ft.

Dickinson

Location: 3 mi w Dickinson, in J. F. Perry & E. M. Martin survey.

Discovery Data: Republic Prod. Co., torsion balance prospect, 1928.

Extent of Development: Republic Prod. Co.'s Lobit 1, drilled in 1929, had slight gas show in sand at 1000 ft and was abandoned in shale at 4865 ft. H. H. Stevenson's E. Lobit 1 only reached 477 ft.

Principal Lease Holders: Republic.

Hitchcock

Location: Centers around Hitchcock, in W. H. Jack, James Butler and other surveys.

Discovery Data: Gas and sulphur water in water wells; geophysics, including Shell Petroleum Corp. seismograph in 1929.

Geology: Regarded as not being a salt dome, possibly a structure.

Extent of Development: Undrilled.

San Leon

Location: 4 mi e Dickinson, in J. W. Little and A. Edward surveys.

Discovery Data: Seismograph prospect of Humble Oil & Refining Company, 1929.

Geology: Regarded definitely a salt dome.

Extent of Development: Undrilled.

Grimes County

Prospects

Carlos

Location: 3 mi e Carlos, Pat B. O'Connor survey.

Discovery Data: Surface indications. Oil shows obtained in several wells in O'Connor survey around 2800 ft.

Geology: Geophysics furnished evidence of an uplift.

Extent of Development: Several tests.

Deepest Hole: 2800 ft.

Yarboro

Location: 3 mi sw Yarboro, J. J. Whiteside and J. E. Groce surveys.

Discovery Data: Torsion balance, Cranfill-Reynolds Co., 1929.

Extent of Development: 2 tests, no production.

Deepest Hole: Cranfill-Reynolds' Baylor 1, 4600 ft, shows between 1800-2200 ft.

Hardin County

Oil Fields

Ariola

Location: 2 mi w Voth, Eduardo Ariola survey.

Discovery Data: Seismograph, Gulf Production Co., 1928. Also shown as dome by seismographs of Humble, Shell and others prior to actual drilling. First production: Republic Prod. Co.'s and Houston Oil Co.'s Ariola Fee 1, completed Sept. 14, 1932, flowing 320 bbls 41 gravity net oil, 60 per cent water, daily through 3/8-inch choke from sand at 3995 to 4157 ft. This was first test drilled on the prospect.

Geology: Salt dome: top of salt 4133 ft.

Producing Formation: Not revealed.

Extent of Development: 6 tests, 1 oil well, 5 dry.

Deepest Hole: Gulf's Kirby Lumber Co. 1-A, abandoned in shale at 6743 ft.

Productive Area: Not determined.

Production History: 1932 output 7630 bbls; February 1, 1933, one well was yielding around 75 bbls daily.

Principal Lease Holders: Republic Production Co., Houston Oil Co. and Gulf Production Co.

Batson

Location: Adjacent to town of Batson on northwest. Lies in following surveys: A. M. Lejarza, B.B.B.&C.

R.R., Jno. Knight, H. Green, Willis Donoho, J. Milhome, Champion Choate, and State Land Vacancy.
Discovery Data: Gas seeps and paraffin dirt. First production: Paraffin Oil Co.'s Fee 1, Oct. 31, 1903, 600 bbls, 790 ft.
Geology: Salt dome. Top of cap rock 1080 ft; salt 2050 ft.
Producing Formations: Cap rock around 200 ft, and Oligocene sands ranging down to 3600 ft.
Extent of Development: Partly estimated: 1350 tests drilled, 1130 oil producers, 220 dry.
Deepest Hole: The Texas Co.'s Le Jarza 3, 4930 ft.
Productive Area: About 575 acres.
Production History: 1932 output 294,599 bbls; total to Jan. 1, 1933, 35,826,092 bbls. March, 1933, field had 160 oil wells with combined output around 700 bbls daily.
Principal Lease Holders: The Texas Co., W. G. Christian et al, Paraffin Oil Co., Ada Bell Oil Co., East Batson Oil Co., Hill & Dowell, Capitol Oil Co., Deutser Oil Co., Acorn Oil Co.

Saratoga

Location: Adjacent to Saratoga, toward the east. In following surveys: M. E. Hopkins Nos. 1 and 2, B.B.B. & C. Railroad No. 132, C. F. S. Jordit, J. F. Cotton, R. Teel, N. Fuller, J. Lewis, B.B.B.&C. R.R.
Discovery Data: Broken surface, mineral water, and gas seeps. First production: Hooks et al's Hooks 1, 1901, 500 bbls, 995 ft.
Geology: Salt dome. Top of cap rock 1500 ft, salt 1900 ft.
Producing Formations: Pliocene-Miocene and Oligocene sands at 500-2000 ft, and around 2650 ft, 3100 ft, and 3300 ft.
Extent of Development: Partly estimated: 1040 tests, 855 oil producers, 185 dry.
Deepest Hole: Vacuum Oil Co.'s R. Teel 3 (?), 4475 ft.
Productive Area: About 675 acres.
Production History: 1932 output 322,820 bbls; total to Jan. 1, 1933, 26,862,752 bbls. At opening of March, 1933, field had 170 producing wells with combined output around 800 bbls daily.
Principal Lease Holders: Paggi Brothers, Weldon Oil Co., Gulf Production Co., Sun Oil Co., Rio Bravo Oil Co., E. W. Skinner, Humble Oil & Refining Co., Magnolia Petroleum Co.

Sour Lake

Location: Adjoins Sour Lake on the north, being in Stephen Jackson survey.
Discovery Data: Broken surface, gas seeps, and mineral waters. First production: Sour Lake Oil Co.'s Fee 2, July 18, 1902, 10,000 bbls, 375 ft.
Geology: Salt dome. Top of cap rock 660 ft; salt 750 ft. Field produced originally from cap rock in large quantities; revived in 1913 by discovery of deep flank sands.
Producing Formations: Pliocene-Miocene sands and cap rock at 500-1200 ft, and Middle Oligocene and Lower Oligocene sands at 2000 to 4400 ft. Also oil sands around 4400 ft on ne flank of dome identified as lower Jackson and Yegua (Claiborne).
Extent of Development: Partly estimated: 1563 tests, 1248 oil producers, 315 dry.
Deepest Hole: M. L. Yount, Trustee's Runge 1 (50-ac), ne flank of dome, 4000 ft ne production, hit salt at 4405 ft, and drilled in flakey salt, sand, shale and salt crystals, to 6435 ft; abandoned at 6435 ft March 3, 1933.
Productive Area: About 950 acres.
Production History: 1932 output 620,762 bbls, total to Jan. 1, 1933, 75,466,849 bbls. March, 1933, 197 wells produced around 1600 bbls daily.
Principal Lease Holders: Rio Bravo Oil Co., Lake View Oil Co., Gulf Production Co., The Texas Co., Orange Petroleum Co., Minor Oil Co., Gilbert Oil Co., Lake Graham Oil Co., Theis Oil Co., Yount-Lee Oil Co., Houston Production Co., M. L. Yount, Tr., Prudential Oil Co.

Prospects

Grigsby

Location: E. Grigsby survey; 8 mi e Saratoga dome.
Discovery Data: Petty Geophysical Engineering Corp. torsion balance and seismograph prospect, 1929. The prospect is undrilled, but is under lease to the Petty interests.

Votaw

Location: 3 mi ne Votaw, Benj. H. Hawkins survey and M. Sherman survey.
Discovery Data: Geophysical work was done in 1931 by several companies, including Gulf Production Co. seismograph.
Extent of Development: 3 tests, dry.
Deepest Hole: S. Robichaux's McShane 1, Hawkins survey, 3919 ft.

Harris County

Oil Fields

Goose Creek

Location: Wm. Scott Upper League, Lower League, and Labor and Goose Creek Bay.
Discovery Data: Broken surface and gas seeps. First production: T. C. Rucker et al's Gaillard 2, 1906, 800 bbls., 1600 ft.
Geology: Regarded as probably a very deep seated salt dome; no cap rock or salt has been encountered despite drilling of several deep tests.
Producing Formations: Pliocene-Miocene and Oligocene sands at 1000 to 4600 ft. One well produced a little oil at 5875-5894 ft.
Extent of Development: Partly estimated: 950 tests, 613 oil producers, 37 dry.
Deepest Hole: Humble Oil & Refining Co.'s Simms-Smith 74, abandoned in February, 1929, in sticky shale at 6967 ft.
Productive Area: About 875 acres.
Production History: 1932 output 1,291,572 bbls., total to Jan. 1, 1933, 70,895,710 bbls; March 1, 1933, 119 wells, 3400 bbls daily.
Principal Lease Holders: Humble Oil & Refining Co., Gulf Production Co., Southern Exploration Co., Port City Oil Co., Gulf Coast Oil Corporation, Powell Oil Co., Atlantic Oil Producing Co., Ferrel & Ehrhart, Newton & Lillie, Wier Oil Co.

Hockley

Location: 4 m s Hockley. In following surveys: T. A. Sulley, A. B. Langermann, S. Everett, E. Ehrenberg, A. Gulliver, T. Cobhill, H.T.&B. R.R. No. 1, and J. Hudson.
Discovery Data: Broken surface and other surface indications. First production: Texas Exploration Co.'s Warren 13, Oct. 15, 1923, 25 bbls, 26 gravity, 1820 ft.
Geology: Salt Dome. Top of cap rock, 115 ft.
Producing Formations: Oil production from sands at 1800 ft and 2400 ft.
Extent of Development: 70 tests, 4 oil producers, 66 dry.
Deepest Hole: Humble Oil & Refining Co.'s Warren 7, abandoned in summer of 1930 at 7063 ft.
Productive Area: Small.
Production History: In four years beginning 1904 field produced 30,000 bbls. None since until John Deering completed a 500-bbl well at 2427 ft in February, 1933.
Principal Lease Holders: Humble Oil & Refining Company, John Deering. Companies which have drilled at Hockley include The Texas Company, Marland Oil Company.
Remarks: Salt is mined from shallow salt plug.

Humble

Location: Under and to the east of Humble townsite.
Discovery Data: Surface elevation, gas seeps, and paraf-

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Oil companies, with operating headquarters in Houston, spend more than $500,000,000 annually for all purposes to carry on their operations.

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The Houston Chamber of Commerce will appreciate the opportunity to be of service to any group or individual desiring special information about the Gulf Coast Petroleum fields. Address department F.

fin dirt. First production: D. R. Beaty's No. 1, Jan. 9, 1905, 5000 bbls, 700 ft.
Geology: Salt Dome. Top of cap rock, 1000 ft, salt 1200 ft.
Producing Formations: Cap rock and sands of Miocene, Oligocene, Jackson, and Claiborne age, at depths of 700 to 5670 ft. Field had many prolific wells, including over 50 more than 5000 ft deep.
Extent of Development: 1533 tests, 1215 oil producers, 318 dry.
Deepest Hole: Benedum & Trees' W. L. Foley 1, sw flank of dome, J. Ryan survey, abandoned in shale July 1, 1930, 8181 ft.
Productive Area: About 2500 acres.
Production History: 1932 output, 2,229,687 bbls, total to Jan. 1, 1933, 114,830,719 bbls. At beginning of March, 1933, 240 wells had combined output around 5500 bbls daily.
Principal Lease Holders: The Texas Company, Humble Oil & Refining Co., Gulf Production Co., Sun Oil Co., Continental Oil Co., South Texas Petroleum Co., Southern Petroleum Co., Louisiana Oil Refining Corp., J. D. Clay, Martin, Drake & Jones, E. M. Wilson Oil Co., J. H. Burt, Jno. Deering, Rio Bravo Oil Co.

Mykawa

Location: ½ mi sw of Mykawa in W. J. Lovett, W. B. Walker, and J. C. Megginson surveys.
Discovery Data: Gas in old wells and surface indications; but torsion balance survey of North American Exploration Co. (1928) for H. C. Cockburn gave evidence of deep salt dome, leading to opening of field.
Geology: Regarded as possible deep-seated salt dome, although no cap rock or salt has been encountered.
Producing Formations: Miocene and Oligocene (Frio) sands at 4100-4900 ft
Extent of Development: 16 tests, 7 oil producers, 1 gas, 8 dry. Several of the producers soon ceased producing, however, and after working over or deepening were abandoned.
Deepest Hole: Higgins Oil & Fuel Co.'s E. G. Siadous 1, Wm. Lovett survey, abandoned at 6673 ft early in 1930.
Productive Area: Not defined.
Production History: 1932 output 101,104 bbls, total to Jan. 1, 1933, 185,805 bbls. At beginning of March, 1933, two wells had combined output around 250 bbls daily.
Principal Lease Holders: Crown Central Petroleum Corp. and Framer Oil & Gas Corporation (jointly), Hamill & Smith, Higgins Oil & Fuel Co., Watts Drilling Co.

Pierce Junction

Location: 6 mi sw Houston. In following surveys: I. &G.N. R.R. No. 47; J. Kopman, B.B.B.&C. R.R. No. 1028, and J. Hamilton Nos. 51, 52, 53, 96 and 98.
Discovery Data: Surface elevation, gas seeps, and paraffin dirt. First production: Gulf Production Co.'s Taylor 2, Feb. 19, 1921, 75 bbls, 3525 ft.
Geology: Salt Dome. Top of cap rock, 700 ft, salt 950 ft.
Producing Formations: Miocene, Middle Oligocene, Frio, and Lower Oligocene sands at 3400 to 5566 ft. Numerous good wells over 5000 ft deep.
Extent of Development: 376 tests, 209 oil producers, 167 dry.
Deepest Hole: Rio Bravo Oil Co.'s Settegast 18-A, abandoned in February, 1932, 6175 ft.
Production History: 1932 output, 1,832,559 bbls, total to Jan. 1, 1933, 25,393,735 bbls. At beginning of March, 1933, 66 wells had combined output around 6800 bbls daily.
Principal Lease Holders: Rio Bravo Oil Co., Gulf Production Co., Navarro Oil Co., Moody Corp., H. R. Cullen, Humble Oil & Refining Co., Anderson & Plummer, T. G. Shaw et al, Abercrombie & Harrison, Warner-Quinlan Co., Tilton & Perot, South Texas Production Co.

Prospects

Addicks

Location: Near Addicks, centering around northern portion of Wm. Hardin survey.
Discovery Data: Surface evidence caused first interest; torsion balance of Cockburn Oil Corporation, about 1932, indicated a "high." Gulf Production Co. is also reported to have done geophysical work in this area.
Geology: Indicated "high."
Extent of Development: 3 tests, dry.
Deepest Hole: Hewitt & Shibe's Don Wise 1, Washington Co. R.R. Survey No. 11, was abandoned early in 1932 in shale at 4530 ft.

Aldine

Location: Simon Contreras survey.
Discovery Data: Torsion balance prospect of Petty Geophysical Engineering Corp., 1928. Gulf, Humble, The Texas Co., and others also checked prospect about same time and took leases. On re-check by various companies, however, there was no verification, it was reported, and Vacuum Oil Co.'s geophysics failed to find encouragement. In 1932 prospect was being worked again by Petty, and according to unconfirmed reports that work did not show prospect up as promising. No drilling has been done on the prospect.
Extent of Development: None.

Almeda

Location: Adjacent to Almeda on the south, in R. T. Blackburn, J. Hamilton, H. Sanders surveys.
Discovery Data: Vacuum Oil Co. torsion balance prospect, 1928. Area also gave promise previously through surface indications. Seismograph as well as torsion balance has given indication of a very deep dome.
Geology: Indicated salt dome.
Extent of Development: Only one test has been drilled following geophysical work: South Texas Petroleum Co.'s (Cullen & West's) Hicks-Higbee 1, J. Hamilton survey, abandoned at 4412 ft in early 1929. Also about 2 mi to west 2 previous tests drilled in H. Sanders survey, including a 3500-ft test of Cullen et al.

Bammel

Location: 3 mi w Westfield; C. Walters, D. Harmon, C. H. Delesezdenie surveys.
Discovery Data: Humble Oil & Refining Co. torsion balance prospect, 1928.
Extent of Development: Undrilled.

Cedar Bayou

Location: 6 mi se Crosby, Hannah Nash and George Ellis surveys.
Discovery Data: Surface indications; seismograph, Shell Petroleum Corp., 1929; Sloan Prospecting Co., torsion balance.
Geology: Indicated dome.
Producing Formations: Gas shows 1500, 3200 and 4400 ft; slight oil shows 4000, 4475, 4800 and 4900 ft.
Extent of Development: 4 tests, dry.
Deepest Hole: Sloan's Ulrich 1, 6221 ft.
Productive Area: None.
Production History: None.
Principal Lease Holders: Sloan Prospecting Co., Shell Petroleum Corp.
Remarks: All tests below 5500 ft.

Deer Park

Location: Between Deer Park and Strang, Enoch Brinson survey.
Discovery Data: Torsion balance prospect, 1928; Humble

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Oil & Refining Co., Gulf Production Co. and others.
Geology: Dome prospect, nothing to confirm.
Producing Formations: Reported gas show, 6000 ft.
Extent of Development: 3 tests since geophysical work, several shallow tests earlier.
Deepest Hole: Strang Petroleum Corp.'s J. W. Good 1, 6354 ft, 1930.

Eureka

Location: 2 mi nw Eureka, John Flowers survey.
Discovery Data: Torsion balance, Humble Oil & Refining Co. and Navarro Oil Co., 1929.
Geology: Seismograph did not confirm torsion balance indication of salt dome.
Extent of Development: One test, dry.
Deepest Hole: Buffalo Oil Co.'s Beall 1, 4665 ft.

Genoa

Location: 2 mi s Genoa; Aug. Whitlock, G. Dedrick, J. Pruitt. D. Putnam surveys.
Discovery Data: Torsion balance prospect, 1928; North American Exploration Co. for H. C. Cockburn.
Extent of Development: 2 tests, 1 gas, 1 dry.
Deepest Hole: Humble Oil & Refining Co.'s Woodburn 1, 5772 ft.
Production History: Humble's Woodburn 2 made 25M gas, 700 lbs pressure, 3413-3425 ft.
Principal Lease Holders: H. C. Cockburn.
Remarks: Humble took over Cockburn block, drilled 2 tests and turned back, 1930.

Red Bluff

Location: 4½ mi se La Porte, Wm. P. Harris survey, jutting into Trinity Bay.
Discovery Data: Torsion balance prospect outlined by Sloane Prospecting Co., 1931.
Extent of Development: Not drilled.
Principal Lease Holder: Wm. Minchen, Houston.

Hale

Location: In ne corner of county, 8 mi ne Humble, centering around R. Hanks survey.
Discovery Data: Worked geophysically about 1928 by Gulf Production Co., Shell Petroleum Corp., and Humble Oil & Refining Co., and prospect did not rate high.
Extent of Development: One test, dry.
Deepest Hole: W. R. Alexander et al's Herman Hale 1, abandoned in May, 1932, 5086 ft (shale).
Remarks: Had small gas show at 2500 ft and oil show at 3300 ft.

Ogburn

Location: 5½ mi s Cypress, Jno. C. Ogburn survey.
Discovery Data: Cranfill-Reynolds Co. torsion balance prospect, 1930. Later geophysical work by others did not show evidence of a dome or structure.
Extent of Development: One test, dry.
Deepest Hole: Cranfill-Reynolds Co.'s Rorick 1, ne corner Ogburn survey, 5420 ft, July, 1930.
Remarks: Had three oil shows, one each immediately above and below 2200 ft, and one around 3300 ft.

Satsuma

Location: 2 mi n Fairbanks, A. Lawson, Geo. Ayres, M. McFarland, J. M. Dement surveys.
Discovery Data: Originally a torsion balance prospect of Humble Oil & Refining Company, 1928; and Gulf Production Co. is reported to have obtained reaction later with torsion balance.
Extent of Development: Undrilled.

Tomball

Location: Prospect of very large area, lying in and around towns of Tomball and Hufsmith, and extending across county line into Montgomery County. Leasing has embraced all or portions of Jno. M. Hooper, Wm. Hurd, Jos. House, Jesse Pruitt, Jno. M. Smith, Ralph Hubbard, Jos. Miller, Jas. Coulter, W. H. March, Jno. C. Donnelly, Andrew Lawson, Wm. White, Isaac Mansfield, Jas. Brown, and some other surveys.
Discovery Data: Surface indications, geophysics, area, and subsurface evidence in wildcat wells, drilled both before and since recent leasing campaign, has substantiated evidence of a large uplift, regarded by some as being of magnitude and characteristics similar to the new oil-producing Conroe structure, about 15 mi to northeast.
Geology: Regarded by some as large uplift with local highs at ne and sw ends, or as possibly having three separate local highs.
Extent of Development: Two tests, see remarks.
Deepest Hole: 6050 feet; see remarks.
Remarks: In ne extremity of above outlined area Indian Hill Oil Co.'s W. L. Schweinle 1, south part Wm. White survey, abandoned in December, 1932, at 6143 ft in water sand; wet gas showing was reported at 5300 ft, oil show at 5600 ft, and gas show at 5650 ft. Mills Bennett Production Co.'s Kleppel 1, 3 mi sw in W. H. March survey, was abandoned March 1, 1933, in shale at 6050 ft, having logged formations somewhat higher than Indian Hill test. Two other locations have been made: Magnolia Petroleum Co.'s Wm. Marten's 1, 1½ mi nw Tomball, Jos. House survey, and Weatherall Oil Co.'s Cora V. Peden 1, Jno. Brock survey.

Jasper County

Oil Fields

Rockland

Location: 2 mi ne Rockland; B. Addison, P. Smith surveys.
Discovery Data: Surface indications. Drilling began in 1902. First production in 1928.
Geology: Structure rather than salt dome type.
Producing Formations: Sand around 1275 ft, considered base of Jackson or top of Yegua.
Extent of Development: Over 25 holes drilled, including several oil producers.
Deepest Hole: Two tests drilled below 3000 ft.
Productive Area: Small.
Production History: 1932 output, 5,183 bbls, total to Jan. 1, 1933, 24,924 bbls; March 1, 1933, 3 wells, combined output 15 bbls.
Principal Lease Holders: East Texas Oil Company (Kountze Bros. of New York), Great Lakes Oil Co., Gulf Production Co., Humble Oil & Refining Co., The Texas Co., Houston Oil Co., Southern Petroleum Co.

Prospects

Sarah Gray

Location: 9 mi n Beaumont, w part Sarah Gray survey, sw corner of county, and extending across river into S. K. Vanmeter survey, Hardin County.
Discovery Data: Surface indications; shallow drilling; geophysics, 1932.
Extent of Development: 2 deep tests in addition to shallow drilling.
Deepest Hole: Republic Production Co.-Houston Oil Co. test, Ben Andrews Fee 1, Vanmeter survey, abandoned in December, 1932, in shale at 7420 ft.
Production History: None.

Jefferson County

Oil Fields

Big Hill

Location: 8 mi se Hampshire; S. Eaton, E. L. & R. R. No. 373, J. L. Dyson, D. D. Dyson, and Wm. McFaddin surveys.
Discovery Data: Elevation, gas, indications. First pro-

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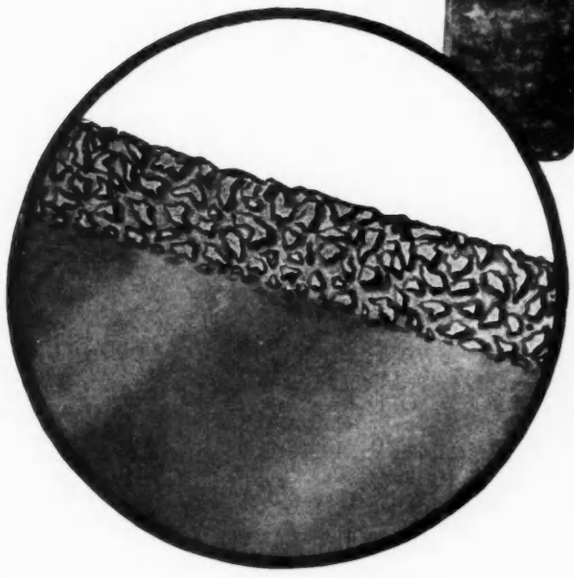

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duction: Houston Oil Co.'s Pipkin-Davis 1, March 29, 1923, 35 bbls, 1735 ft.
Geology: Salt Dome. Top of cap rock, 200 ft. (Known since 1901).
Producing Formations: Several small oil wells at 1700-1800 ft; gas at 5900-5958 ft.
Extent of Development: 47 tests drilled, 4 productive, 43 dry.
Deepest Hole: The Texas Co.'s Pipkin 2, abandoned at 6010 ft.
Productive Area: Practically none.
Production History: 12,000 bbls in 1923-1924; none since.
Principal Lease Holders: The Texas Co., Houston Oil Company.

Fannett

Location: 2½ mi sw Fannett; J. Blackman, M. Bouse, W. H. Smith surveys.
Discovery Data: Seismograph, Gulf Production Co., 1925. First oil: Gulf's Bordages 2, Jan. 20, 1927, 50 bbls.
Geology: Salt dome: top of cap rock 870 ft, salt 2200 ft.
Producing Formations: Miocene sand 3901-4375 ft; Middle Oligocene 4849-5020 ft; Lower Oligocene 5608-5660 ft.
Extent of Development: 34 tests: 9 oil, 25 dry.
Deepest Hole: Gulf's Bordages 8, dry, 6661 ft.
Productive Area: Not determined.
Production History: 1932 output, 145,200 bbls, total to Jan. 1, 1933, 966,300 bbls; 4 wells, 375 bbls, March 1, 1933.
Principal Lease Holder: Gulf Production Co.

Spindle Top

Location: 2 mi s Beaumont; Jno. A. Veatch, P. Humphrey, J. Douthit surveys.
Discovery Data: Elevation, gas, mineral waters, indications. First production: J. F. Lucas' Gladys 1, Jan. 10, 1901, 84,000 bbls, 1139 ft.
Geology: Salt dome; top of cap rock, 700 ft; salt 1200 ft.
Producing Formations: Cap rock and Miocene sands 800-1200 ft; Miocene 2500-3500 ft; Oligocene-Lower Oligocene 4000-5879 ft.
Extent of Development: Partly estimated; 1655 tests drilled; 1345 oil, 310 dry.
Deepest Hole: Yount-Lee Oil Co.'s Gladys City 6, dry at 6765 ft.
Productive Area: About 425 acres.
Production History: 1932 output, 1,307,315 bbls, total to Jan. 1, 1933, 118,022,267 bbls; 110 wells, 3500 bbls, March 1, 1933.
Principal Lease Holders: Yount-Lee Oil Co., Gulf Production Co., Magnolia Petroleum Co., Rio Bravo Oil Co., The Texas Co., Sun Oil Co.

Prospects

Cheek

Location: M. Pivitot, W. Carr surveys.
Discovery Data: Surface indications; showings in old wells; torsion balance, Cockburn Oil Corp, 1929. Gulf Production Co. and Humble Oil & Refining Co. also worked geophysically and took leases.
Extent of Development: 3 tests.
Deepest Hole: 7000 ft (See Remarks).
Remarks: Humble Oil & Refining Co.'s Nelson 1, Wm. Rice, survey, abandoned late in 1931 at 6537 ft. Jack Schultz's O. M. Todd 1, nw corner Wm. Carr survey, had shows of oil and gas at 3400, 4175, 5200, 5400, 5500, 5600, and 6375 ft. Todd 2, 1800 ft south, shut down at 7000 ft, ran 180 ft higher, also reported showings.

Hamshire

Location: 1½ mi nw Hamshire, T. & N. O. 86 survey.
Discovery Data: Seismograph prospect, Shell Petroleum Corp., 1928; later checked by torsion balance.
Extent of Development: 1 test.
Deepest Hole: 7100 ft (See Remarks).
Remarks: Shell's Heisig 1, was abandoned at 7305 ft in October, 1929; had oil show at 5000 ft and another slight show at 7100 ft.

Jefferson Coast

Location: 8 mi s Big Hill dome, T. & N. O. surveys 367, 368, 369, 370.
Discovery Data: Humble Oil & Refining Co. reported to have found a prospect here by seismograph in 1932.

La Belle

Location: 12 mi sw Port Arthur, T. & N. O. 208, A. Hotchkiss surveys.
Discovery Data: Torsion balance prospect, Vacuum Oil Co., 1929. Checked negative by seismograph after test was drilled.
Extent of Development: Vacuum's Broussard & Hebert 1, sole test, was abandoned in November, 1929, in shale at 5673 ft.

McFadden Ranch

Location: 10 mi w Sabine City; E. McKnight and adjacent surveys.
Discovery Data: Seismograph, Shell Petroleum Corp., 1928. Humble Oil & Refining Co. also showed prospect favorably by geophysics. Shell torsion balance in 1925 had failed to give dome indications. Only Shell and Humble showed this prospect as a dome.
Extent of Development: Sole test, Humble's McFadden 1, T. & N. O. Survey 234, was abandoned in June, 1931, at 7663 ft in shale, no interesting showings having been reported.

Liberty County
Oil Fields

Esperson

Location: 6 mi sw Dayton; C. W. Fisher, D. L. Kokernot, M. Duncan, O. G. Gigstradt, A. M. Damron and C. C. Brunson surveys.
Discovery Data: Torsion balance, Union Exploration Co., 1928. First oil: Harvey S. Smith's Moores Bluff Corp. 1, 800 bbls., 3304-3320 ft, Aug. 15, 1929.
Geology: Considered deep-seated salt dome, although no cap rock or salt has been reached.
Producing Formations: Miocene sands 2275-2390 ft; and 3250-3350 ft; sands 3950-4124 ft; Jackson sands 5707-5752 ft, 6707-6711, and 6990-7067 ft; Upper Saline Bayou sands 7346-7624 ft.
Extent of Development: 46 tests; 35 oil, 2 gas, 9 dry.
Deepest Hole: Yount-Lee Oil Co.'s Moores Bluff Corp. 3, e flank, made gas and spray oil 7592 ft, deepened and stuck drill stem 7822 ft, plugged back and completed at 2836 ft in November, 1930.
Productive Area: Not large.
Production History: 1932 output 508,277 bbls, total to Jan. 1, 1933, 2,136,460 bbls. At beginning of March, 1933, 27 wells had combined output 1600 bbls daily.
Principal Lease Holders: Cranfill-Reynolds Co., Yount-Lee Oil Co.

Hankamer

Location: 7½ mi s Devers; Levi Barrow, Geo. Strangler, A. Weaver, and H. & T. C. 22 surveys.
Discovery Data: Torsion balance, Gulf Production Co., 1926-1928. First oil: Gulf's Boyt 1, second test of area, H. & T. C. Survey 22, flowed 700 bbls 20 gravity oil, 2674 ft, June 6, 1929.
Geology: Regarded as deep-seated dome, no cap rock or salt has been reached.
Producing Formations: Miocene sands around 2650 ft; other sands around 2900, 3600, 3800, 4000 to 4400, and 4800 ft. (Numerous lenticular sands, different gravities of oil).
Extent of Development: 19 tests: 15 oil, 4 dry.
Deepest Hole: Gulf's Ezzell 1, w flank, Levi Barrow

survey, tested oil at 2800 and 3800 ft in regular oil horizons and had shows at 5400 and 5800 ft and final depth; abandoned in February, 1931, at 7095 ft.
Productive Area: Not defined.
Production History: 1932 output 679,100 bbls, total to Jan. 1, 1933, 2,021,547 bbls. At beginning of March, 1933, 13 wells had combined output around 1850 bbls daily.
Principal Lease Holder: Gulf Production Company.
Remarks: Prior to geophysical work promise of oil furnished through mineral waters.

Hull

Location: Jesse Devore, S. Wickliff, I. & G. N. 27 & 28, and Chas. Underton surveys.
Discovery Data: Elevation, gas, indications. First production: Republic Production Co.'s Fee 3, July 26, 1918, 1000 bbls, 1200 ft.
Geology: Salt Dome. Top of cap rock, 350 ft. Top of salt 700 ft.
Producing Formations: Miocene, Oligocene, Claiborne sands at 1800 to 5450 ft.
Extent of Development: 748 tests, 606 oil, 142 dry.
Deepest Hole: Eclipse Oil Co.'s Barrow 2 (?), 600 bbls, 5450 ft, September, 1932.
Productive Area: About 750 acres.
Production History: 1932 output 1,912,481 bbls, total to Jan. 1, 1933, 71,811,171 bbls. Beginning of March, 1933, 167 wells producing 5100 bbls.
Principal Lease Holders: Gulf Production Co., Republic Production Co., The Texas Co., Magnolia Petroleum Co., Empire Gas & Fuel Co., Phoenix Development Co., Mecom Oil Co., Houston Production Co., Humble Oil & Refining Co., Eclipse Oil Co.

North Dayton

Location: 7 mi nw Dayton; H. & T. C. RR. Surveys 118, 119, 120, 124, 125 and 135.
Discovery Data: Elevation, gas, indications. First production: Paraffin Oil Co.'s Fee 3, Sept., 1905, 5000 bbls, 800 ft.
Geology: Salt Dome. Top of cap rock 600 ft, salt 800 ft.
Producing Formations: Cap rock and Miocene sands at 400 to 1100 ft; Oligocene sands at 4075 to 5188 ft.
Extent of Development: 172 tests, 71 oil, 101 dry.
Deepest Hole: Harvey S. Smith et al's Kynerd 1, west flank, Sect. 31, dry at 5700 ft, December, 1930.
Productive Area: About 200 acres.
Production History: 1932 output 110,674 bbls, total to Jan. 1, 1933, 1,989,377 bbls. Beginning of March, 1933, 10 wells had combined output around 180 bbls daily.
Principal Lease Holders: D. J. Harrison, Gulf Production Co., Humble Oil & Refining Co., The Texas Co., Sun Oil Co.

South Liberty

Location: 3 mi s Liberty; M. G. White, D. Minchey, Wm. Duncan, and Eliz. Munson surveys.
Discovery Data: Sulphur springs, gas escapes, oil seepages, indications. First production: South Liberty Oil Co.'s Pickett 2, Jan. 1925, 25 bbls., 3206 ft.
Geology: Salt Dome. Top of cap rock, 350 ft, salt 500 ft.
Producing Formations: Cap rock, Oligocene, Jackson, and Claiborne sands; around 1000 ft, and from 2000 to 3900 feet.
Extent of Development: 410 tests, 277 oil, 133 dry.
Deepest Hole: Empire Gas & Fuel Co.'s O'Brien 13 (?), dry at 4594 ft, September, 1930.
Production History: 1932 output 390,966 bbls, total to Jan. 1, 1933, 14,144,023 bbls. Beginning of March, 1933, 66 producing wells had combined output around 850 bbls daily.
Principal Lease Holders: Navarro Oil Co., Sun Oil Co., Bashara Oil Co., The Texas Co., Humble Oil & Refining Co., Gulf Production Co., Empire Gas & Fuel Co., Magnolia Petroleum Co., Fort Bend Oil Co., Yount-Lee Oil Co.

Proven Salt Domes: No Production

Davis Hill

Location: 16 mi n Liberty; Manuel de los Santos Coy and J. D. Martinez Nos. 6 and 9 surveys.
Discovery Data: Elevation, gas, broken surface, indications.
Geology: Salt Dome. Top of cap rock, 800 ft., salt 1200 ft.
Producing formations: None.
Extent of Development: 44 tests, all dry.
Deepest Hole: The Texas Co,'s Havard 1, 5160 ft.
Productive Area: None.
Production History: Only production has been that found in non-commercial quantities around 1000 ft.
Principal Lease Holder: The Texas Co.

Prospects

Cleveland

Location: Adjacent to Cleveland on southeast; J. Fenner, Clayton Harper surveys.
Discovery Data: Surface indications; Humble Oil & Refining Co. said to have found encouragement with torsion balance in 1931; Gulf Production Co. shot with seismograph but did not find evidence of a salt dome.
Producing Formations: None.
Extent of Development: 2 tests.
Deepest Hole: 5633 ft.
Remarks: L. B. House's Palmer 1, Fenner survey, drilled in 1931, 3620 ft, reported oil shows around 3150 ft. J. R. Ingram's Hornbeck 1, Harper survey reached 5633 ft early in 1931.

Devers

Location: N part M. Whittington survey; 1½ mi n Devers.
Discovery Data: Torsion balance prospect, Humble Oil & Refining Co., 1929.
Extent of Development: Humble's Sabine Tram 1 was abandoned at 5801 ft in 1930; no shows reported.

Heiskell

Location: 9 mi s Liberty; w portions Joseph Dugat, Theodore Dorsett surveys.
Discovery Data: Torsion balance prospect, Rycade Oil Oil Corp., 1930; also later used seismograph.
Extent of Development: One test.
Deepest Hole: 5930 ft.
Remarks: Rycade's Heiskell 1, Dugat survey, was abandoned at 5930 ft in hard sand late in 1930; no shows reported, but company continued holding leases.

Liberty-Chambers Counties Oil Fields

Moss Bluff

Location: 10 mi se Liberty; B. M. Spinks, R. O. W. McManus, Jean Barry, N. D. Labadie and James McFaddin surveys.
Discovery Data: Seismograph, Gulf Production Co., 1926. First oil: Humble Oil & Refining Co.'s Sterling 6, Dec. 30, 1929, 800 bbls 32 gravity oil from sand at 5500-5666 ft.
Geology: Salt dome; top of cap rock 650 ft; salt 1170 ft.
Producing Formations: Sand above cap rock 781-787 ft; Middle Oligocene sands 5500-5860 ft.
Extent of Development: 56 tests, 4 oil, 52 dry (including numerous sulphur tests drilled into cap rock).
Deepest Hole: Gulf's McFaddin A-4, se flank, aban-

Tabular History of Gulf Coast Oil Fields, Salt Domes and Prospects

doned when drill pipe was stuck in sticky shale at 7375 ft in January, 1932.

Productive Area: Small, due to limited drilling.

Production History: 1932 output 39,862 bbls, total to Jan. 1, 1933, 173,224 bbls. Beginning of March, 1933, 5 wells had combined output around 70 bbls daily.

Principal Lease Holders: Gulf Production Co., Humble Oil & Refining Co., Pure Oil Co., Shell Petroleum Corp.

Matagorda County

Oil Fields

Buckeye

Location: In and around Buckeye; e portions J. C. Keller and C. Cotten surveys.

Discovery Data: Surface geology. First oil: United North & South Development Co.'s Stoddard 1, Buckeye townsite, Lot 53, completed September 13, 1932, flowing 1850 bbls. 38.7 gravity oil daily through 3/8" choke from sand at 7808-7926 ft.

Geology: Regarded as very deep-seated salt dome; no dome material encountered.

Producing Formations: Sand in Marginulina zone (basal Middle Oligocene) at depths of 7750 to 7926 ft.

Extent of Development: First test was discovery well (see above). Same company at middle of March, 1933, also completed second test, St. Louis, Brownsville & Mexico R. R. No. 1, 1000 ft ne discovery well, as producer; 2090 bbls. daily through ½" choke from 7750-7859 ft. Third well drilling.

Deepest Hole: United North & South Development Co.'s Stoddard 1, oil well, 7926 ft deep. (Was drilled to 7951 ft and then plugged back).

Productive Area: Not determined.

Production History: 1932 output 105,455 bbls. At middle of March, 1933, second producer, just completed, gauged 1750 bbls. on ½" and 3/8" chokes, during first 24 hours; while discovery well was being worked over. Latter had been flowing around 600 bbls. daily at beginning of year and 300 bbls. daily around February 1.

Principal Lease Holder: United North & South Development Co.

Markham

Location: 3 mi nw Markham; Wm. Haddon, Hny. Parker surveys.

Discovery Data: Elevation, gas, indications. First production: Hardy Oil Co.'s Hudson 1, Jan. 6, 1908, 3600 bbls., 1734 ft.

Geology: Salt Dome. Top of cap rock 1500 ft.

Producing Formations: Sands at 1900, 2350, 3200, 3400, 3600, 3800, and 4350 ft.

Extent of Development: 242 tests, 115 oil, 127 dry.

Deepest Hole: C. B. Hamill's Elkins 2, abandoned in heaving shale, June, 1932, at 6044 ft.

Production History: 1932 output 529,475 bbls., total to Jan 1, 1933, 4,094,408 bbls. Beginning of March, 1933, 23 wells, combined output around 1619 bbls daily.

Principal Lease Holders: Rycade Oil Corp., Ike Laughlin et al, E. M. Hamill, C. B. Hamill, Humble Oil & Refining Co., Jno. Deering, L. P. Smith, The Texas Co., United North & South Development Co.

Sulphur Field

Big Hill

Location: 1½ mi e of Matagorda; Ira Ingram, Wm. Simpson surveys.

Discovery Data: Elevation, gas, sulphur water, indications. First production: Wm. Cash & W. T. Goode's Mayes Synd. 1, 1904, 100 bbls., 840 ft.

Geology: Salt Dome. Top of cap rock, 825 ft, top of salt 1100 ft.

Producing Formations: Oil was from cap rock, as is sulphur.

Extent of Development: 126 tests, 75 oil, 51 dry (estimated).

Deepest Hole: About 3000 ft.

Productive Area: Small as regards oil.

Production History: 203,580 bbls. in 1904-1907; later output increased total to less than 500,000 bbls; none now.

Principal Lease Holder: Texas Gulf Sulphur Co.

Remarks: Sulphur production.

Proven Salt Domes: No Production

Hawkinsville

Location: ne Hawkinsville; Kingston & Powell, Thos. Williams surveys.

Discovery Data: Seismograph, Gulf Production Co., 1925.

Geology: Salt dome; top of cap rock 100 ft, salt 600 ft.

Producing Formations: None.

Extent of Development: 18 tests, all dry.

Deepest Hole: Gulf's Craig 8, dry at 5095 ft.

Productive Area: None.

Production History: No production.

Principal Lease Holder: Gulf Production Co.

Cedar Lane

Location: Centers around town of Cedar Lane; in Survey 47 (T. J. Jones); adjacent to Brazoria County line.

Discovery Data: Torsion balance prospect, Shell Petroleum Corporation, 1928.

Extent of Development: Undrilled following geophysical work; but Union Sulphur Co. previously drilled Estill (Bowie) 1 to 3500 ft, and Danciger drilled Estill (Bowie) 1 to 2050 ft.

Remarks: Although considered fair prospect following early geophysical work, the area did not show up so favorably in later work.

Citrus Grove

Location: 4 mi nw Matagorda; J. J. Criswell survey.

Discovery Data: Torsion balance, prospect found by North American Exploration Co. for Cockburn Oil Corp., 1930, and also checked by Shell Petroleum Corp. seismograph. Gave good torsion balance picture.

Extent of Development: Two tests following geophysical work. Empire Gas & Fuel Co.'s Boker 1, Lot 14, had dry gas blowout at 6248-6250 ft November, 1930, while drilling, tested salt water at 6295 ft, cemented back to 5500 ft, and redrilled to 6460 ft. Harvey S. Smith's Boker 1, Lot 15, Robbins & Middle Subdivision, 1500 ft nw Empire test, had small gas shows around 3900 ft; abandoned in January, 1932, at 6375 ft.

Mad Island

Location: 4 mi s College Pt., G. Wheelwright survey.

Discovery Data: Torsion balance, Watts Oil Co., 1930.

Extent of Development: Sole test, Watts Oil Co.'s Titus 1, abandoned in shale, July, 1930, at 3509 ft.

Pierce Estate

Location: 3 mi s Pledger; n part of Isaac Foster survey.

Discovery Data: Showed negative in geophysical work by Humble Oil & Refining Co., 1932; but Humble and Gulf Production Co., holding 10,000-acre block, drilled deep test despite geophysical evidence.

Extent of Development: Sole test, Humble-Gulf's Pierce Estate 1, was abandoned in February, 1933, at 7325 ft.

Matagorda County

Prospects—*(Continued)*

Sargent

Location: 4 mi sw Hawkinsville dome; central portions Van Dorn & Bayless and G. Penticost surveys.
Discovery Data: Surface indications; then Shell Petroleum Corp. seismograph, 1929. Considered fair prospect.
Extent of Development: No drilling except old shallow tests.

Sheppards Mott

Location: 6 mi sw Cedar Lane; D. McCarty, F. Fry, J. Dwyer surveys.
Discovery Data: Surface evidence; showings in old wildcats; torsion balance, North American Exploration Co. for H. C. Cockburn, 1928. Torsion balance showed as large dome with local highs on north and south ends.
Extent of Development: Over a dozen tests drilled, about half since geophysical work, latter all being around 5000 ft or deeper.
Deepest Hole: Cockburn Oil Corp.'s Hawkins 1, abandoned in July, 1931, in heaving shale at 6151 ft.
Productive Area: None.
Production History: No commercial production, but various good oil shows found between 2600 and 6000 ft. Cockburn Oil Corp.'s Hawkins 2, in December, 1930, produced about 3 bbls. 37 gravity oil in 2 days with wash water at 5244 ft, but was later abandoned at that depth on account of salt water intrusion.
Principal Lease Holder: Cockburn Oil Corp.

Van Vleck

Location: Adjoins Van Vleck on the north; M. Cummings, A. Rawls surveys.
Discovery Data: Surface indications; old shallow wildcats; geophysics (1932). No drilling since geophysical work.
Extent of Development: About a dozen tests, mostly around 1000 ft deep, but one to 2204 and another to 3286 ft.
Deepest Hole: Humble Oil & Refining Co.'s Robbins 1, abandoned at 3286 ft in 1926.
Principal Lease Holders: Danciger Oil & Refining Co., Gulf Production Co., Humble Oil & Refining Co.

Montgomery County

Oil Fields

Conroe

Location: 4 mi se Conroe: following surveys: D. W. Collis, L. W. Weeden, W. B. Bridges, Evantha Scurry, Robt. Kuykendall, Jno. Davis, W.C. R.R. C. A-645, C. T. Darby, D. McIntyre, L. A. Lang, H. B. Littlefield, Jno. McHorse, I.&G.N. A-649 and 650, J. G. Watson, W. P. McComb, M. W. Real, T. C. Howell, A. McCown A-370, A. M. Folk, Theo Slade, Jos. House A-250, G. A. West, T.&N.O. Nos. 5, 13, and 15, J. Massey, W. S. Rhodes A-764, C. B. Stewart, H. M. Crighton, S. Y. Sitton, Ransom House, W. Strickland, T. M. Wiggins, W. F. Stewart, E. C. Manning, W. S. Rhodes A-763, C. E. Granger, S. H. Bryan, W. C. C. Lynch, Alfonso Stiel, Gowan Harris, Jno. Bricker, Ashby James, T.& N.O. Nos. 3 and 9, G. W. Wagers, J. F. Springfield.
Discovery Data: Surface indications and "trend play" instrumental in drilling of discovery well, which was in northeast part present proven area. Prior to that test geophysics had also given evidence of the structure, showing apex near center of present proven area and consequently about 2 mi se discovery well; hence it was thought at first that geophysical prospect might be separate from field opened by Strake. First oil: G. W. Strake's South Texas Development Co. 1, December 13, 1931, 200 bbls gasoline and much gas, 1900 lbs closed in pressure, from sand at 4981-4991 ft.
Geology: Very large domal structure, about 6 mi in diameter, possibly a deep seated salt dome although no dome material has been encountered. Has local highs, separated by saddle, on e and w sides, with oil sands arching over them; while between n and s ends several faults and a graben of large displacement run across field.
Producing Formations: Minor oil-gas sand shortly below top of Cockfield (top zone of Yegua formation, Claiborne series of Eocene-Tertiary) around 5000 ft; and main Conroe oil sand lower in Cockfield at depths of 5000 to 5250 ft, with depths of most wells from 5100 to 5150 ft. Oil and gas showings occur also in shallower sands.
Extent of Development: As of March 10, 1933, 236 tests, including 220 oil, 3 gas, and 13 dry. (Among dry holes are some drilled outside established limits of production).
Deepest Hole: Gulf Coast Drilling & Production Co.'s South Texas Development Co. 1, se outpost test, abandoned in shale at 5940 ft in December, 1932.
Productive Area: About 15,000 acres.
Production History: Produced 1000 bbls in 1931; 2,571,416 bbls in 1932; and 1,474,400 in January-February, 1933, a total of 4,046,816 bbls to March 1, 1933. On March 15 field was held through proration to about 35,000 bbls production daily from 225 wells.
Principal Lease Holders: Humble Oil & Refining Co., Tide Water Oil Co., Houston Oil Co., Republic Production Co., Strake Petroleum Corp., Sun Oil Co., The Texas Co., Alpha Petroleum Corp., Harrison and Abercrombie, Standard Oil Co. of Kansas. Above operators hold about 12,000 acres of productive or proven leases, and about 3000 acres additional are divided among numerous others.

Prospects

Goodwin

Location: 1 mi e Goodwin: J. Foster survey.
Discovery Data: Surface geology, geophysics, 1932.
Extent of Development: Sole test, Continental Oil Co.'s and Julius Fohs' Rock Creek Lumber Co. 1, abandoned in water sand at 5720 ft in February, 1933.

Pinehurst

Location: 4 mi s Magnolia, S. J. McFarland survey.
Discovery Data: Surface evidence induced drilling. Does not look like salt dome through geophysics, although a structure is reported to have been indicated nearby to southeast by Gulf Production Company torsion balance minimum in 1931.
Extent of Development: Several shallow tests. Also Humble Oil & Refining Co.'s W. A. Renn 1, McFarland survey, was abandoned at 5634 ft in December, 1931.
Principal Lease Holders: Humble Oil & Refining Co., Magnolia Petroleum Co., Shell Petroleum Corp.

Newton County

Prospects

Deweyville

Location: 2½ mi s Deweyville: A. Jordan, W. Wilson, and surveys to west.
Discovery Data: Surface indications; core drilling.
Extent of Development: Humble Oil & Refining Co. drilled series of core tests to about 1000 ft.

Gist

Location: Sw corner of county, 2½ mi se Gist, F. Stover Survey No. 4.
Discovery Data: Surface indications.
Extent of Development: Sun Oil Co.'s Peavey-Moore Lumber Co. 1, Stover survey, sole test, was abandoned in November, 1932, at 7225 ft in hard sand. No oil or gas showings were reported.

Tabular History of Gulf Coast Oil Fields, Salt Domes and Prospects

Orange County
Oil Fields

Orange

Location: 6 mi w Orange: Wm. Dyson, S. M. Luce, B. Garner, J. Dyson surveys.
Discovery Data: Broken surface, gas escapes, indications. First production: Rio Bravo Oil Co.'s Bland 1, Aug. 13, 1913, 500 bbls, 3128 ft.
Geology: No salt dome material encountered; possibly a very deep-seated dome.
Producing Formations: Largely lenticular sands: Pliocene, Miocene, and Oligocene, at depths 2500 to 5303 ft.
Extent of Development: 428 tests, 319 oil, 109 dry.
Deepest Hole: Sun Oil Co.'s Brown 6, abandoned in salt water, January, 1929, 6124 ft.
Productive Area: About 275 acres.
Production History: 1932 output 487,325 bbls, total to Jan. 1, 1933, 30,907,844 bbls. Beginning of March, 1933, 57 wells had combined output around 1179 bbls.
Principal Lease Holders: Gulf Production Co., Sun Oil Co., Brownie-Babette Oil Co., Rex Petroleum Co., Sinclair Prairie Oil Co., Humble Oil & Refining Co., Texhoma Oil Co., Orange Petroleum Co., Continental Oil Co., Rycade Oil Corp.

Port Neches

Location: 2 mi n Port Neches: Mary E. Hall Nos. 1 & 2, and T. J. Notgrass surveys.
Discovery Data: Seismograph, The Texas Co., 1928. First oil: The Texas Co.'s Kuhn 1, first test after geophysical work, 1900 bbls 21.5 gravity, 3160 ft, May 9, 1929.
Geology: No dome material encountered, but like Orange, may be deep-seated salt dome.
Producing Formations: Pliocene-Miocene sands around 3150, 4150, and 4400 ft.
Extent of Development: 13 tests, 10 oil, 3 dry.
Deepest Hole: Gulf Production Co.'s W. H. Stark 1, flank test, dry at 6988 ft, November, 1929.
Productive Area: Small, limited drilling.
Production History: 1932 output 564,000 bbls, total to Jan. 1, 1933, 2,017,193 bbls. Beginning of March, 1933, 8 wells, 1418 bbls.
Principal Lease Holders: The Texas Co., Gulf Production Co.

Prospects

North Vidor

Location: 9 mi ne Beaumont: E. Hurst No. 15, T.&N.O. 34, R. Wier, E. Stover, J. W. Swisher surveys.
Discovery Data: Surface indications.
Extent of Development: Houston Oil Co.'s Hurst 1, sw corner E. Hurst Survey No. 15, was abandoned in shale at 6025 ft in December, 1932; no showings reported. About 2½ mi farther sw E. L. Smith Oil Co.'s Miller-Vidor 1, J. W. Swisher survey, was abandoned at 6225 ft in December, 1932.

Spear

Location: 3½ mi n Beaumont, centering around river junction at point separating Orange, Hardin and Jefferson Counties; Thos. Spear survey.
Discovery Data: Seismograph prospect, Sun Oil Co., 1928. Undrilled. Neither confirmed nor condemned.

Vidor

Location: 2 mi north of town of Vidor, 6 mi ne Beaumont: E. Lewis, J. Davenport, W. C. Sharp surveys.
Discovery Data: Seismograph, Gulf Production Co., 1928. Also re-shot by reflection seismograph method in 1932 after drilling of deep test. Sun Oil Co. also took leases in 1932.
Extent of Development: Sole test, Gulf's Miller-Vidor 1, Lewis survey, was abandoned in March, 1931, in sand at 6500 ft.

Polk County
Oil Fields

Sunshine

Location: 7 mi se Livingston; ne ½ Augustine Viesca 7-League Survey.
Discovery Data: Surface indications. First oil: Sunshine Oil Co.'s Chase 2, 7500 ft from n line and 12,000 ft from e line Viesca survey, pumped 5 bbls 28 gravity oil daily at 3290 ft Feb. 13, 1930; deepened soon to 3382 ft and pumped 15 bbls daily, March 10, 1930. Three mi s, near s line survey, Dick Schwab's Carlton-Davis 1, either on same or separate structure, was completed Oct. 18, 1932, as 20,000,000-cu ft gas well, 1650 lbs closed-in pressure, at 4239-4311 ft.
Geology: Folded and possibly faulted type structure.
Producing Formations: Sunshine discovery well, Jackson sand at 3285-3382 ft. Schwab well, Cockfield sand at 4239-4311 ft. One drilling operation March 15, 1933, in Sunshine area; three in Schwab area.
Extent of Development: 8 tests, 1 oil, 7 dry.
Deepest Hole: Abercrombie & Harrison's Carter Lumber Co. 1, abn in shale at 5596 ft, February, 1933.
Productive Area: Not determined.
Production History: 392 bbls in 1932; none 1933.
Principal Lease Holders: Sunshine Oil Co., Dick Schwab, Shell Petroleum Corp., Abercrombie & Harrison, W. H. Freeman, J. N. McCarty.

Prospects

Ace

Location: 3 mi sw Ace: Peter J. Menard, F. de Rumayor surveys.
Discovery Data: Surface indications originally; geophysics later.
Extent of Development: Several old shallow wells. March 15, 1933: Ace Oil Co.'s (Toner & Purdy's) Martha E. Roberts 1, Rumayor survey, coring shale 5175 ft; Joseph L. Anderson et al's E. I. Duke 1, Menard survey, shut down 4725 ft. Showings reported in some of these wells.

San Jacinto County
Prospects

Shepherd

Location: 5 mi w and little s Shepherd: Horatio Alsbury and surveys to southwest.
Discovery Data: Surface geology, geophysics, "trend play."
Extent of Development: Sole test, Seven Wells Corp.'s Foster Lumber Co. 1, near center Alsbury survey, abandoned in shale at 5041 ft in July, 1932.
Principal Lease Holders: Seven Wells Corp., around wildcat location. Humble Oil & Refining, large block centering around I. Lowry survey, 3 mi to sw.

Tyler County
Gas Fields

Spurger

Location: 3 mi se Spurger, Adolph Sterne, E. Thompson surveys.
Discovery Data: Surface indications. First oil: Joint test of Republic Production Co. and Houston Oil Co., Sterne Fee 1, completed Oct. 10, 1932, estimated 2½ million cu ft gas, 15 bbls salt water spray containing gasoline, pressure around 1800 lbs, through small chokes, depth 4708 ft. Later deepened to 5619 ft, then plugged back and again completed Jan. 20, 1933, as 15,000,000-ft gas well at 4694 ft.
Geology: Believed from limited available information

to be structure like others along Pettus-Raccoon Bend-Conroe trend.

Producing Formations: Cockfield sand around 4700 ft.

Extent of Development: One completed test in addition to discovery well, Republic-Houston Oil's Kirby McShane 1, 3 mi w in B.B.B.&C. Survey 17, abandoned in February, 1933, at 5347 ft. March 15, 1933: Republic-Houston Oil's Kirby 1, Thompson survey, ½ mi ne discovery well, drilling water sand 5015 ft; Kirby 1, separate tract Thompson survey, drilling 4660 ft.

Deepest Hole: Republic-Houston Oil's Sterne Fee 1, reached 5619 ft, then plugged back.

Principal Lease Holders: Republic Production Co. and Houston Oil Company, jointly, control large area, fee lands and leases.

Waller County

Prospects

Waller

Location: 9 mi ne Waller: B.B.B.&C. 97, P. Pevehouse, D. O'Boyle, G. Clary, Stewart, L. H. Jones surveys.

Discovery Data: Surface indications originally; torsion balance, Humble Oil & Refining Co., 1929.

Extent of Development: Only a shallow test, Humble's Taub 1, B.B.B.&C. survey, abandoned in shale at 1025 ft, 1930.

Principal Lease Holders: Humble Oil & Refining Co.

Washington County

Oil Fields

Clay Creek

Location: 12 mi n Brenham: Nestor Clay and J. F. Perry surveys.

Discovery Data: Surface geology of Sun Oil Co. (1926), and core tests. First production: Sun's G. F. Grote 1, Oct. 1928, 65 bbls, 25 gravity, 1154 ft.

Geology: Salt dome. Top of cap rock 1800 ft, salt 3160 ft.

Producing Formations: Claiborne and Wilcox sands at 1200 to 1400 ft.

Extent of Development: 62 tests, 34 oil, 5 gas, 23 dry.

Deepest Hole: Sun's Janner 4, quit in salt, 5517 ft, 1931.

Production History: 1932 output 476,507 bbls, total to Jan 1, 1933, 2,202,330 bbls. Beginning of March, 1933, field had 27 wells, 1095 bbls daily.

Principal Lease Holders: Sun Oil Co.

Wharton County

Prospects

Glenflora

Location: 2 mi sw Glenflora; Wm. Kincheloe survey.

Discovery Data: Surface indications.

Extent of Development: Heep Oil Corp.'s (was Dayvault, Tyler & Gardner's) Dayvault 1, was abandoned February, 1933, 5200 ft; drilled on 3000-acre lease block.

Hilje

Location: 3 mi se Hilje; East Texas R. R. Co. Surveys 26, 27, 37, 38.

Discovery Data: Surface indications originally; torsion balance, Cockburn Oil Corp., 1929.

Extent of Development: Several old shallow wildcats. No drilling since geophysical work.

Hungerford

Location: Adjacent to Hungerford on north; n part Alexander Jackson survey.

Discovery Data: Surface indications; logs of wells; torsion balance minimum (Gulf Production Co., 1931).

Extent of Development: H. H. Givan et al drilled three tests, 850, 1350, and 3025 ft deep, on Hudgins land in 1930-1931. Cullen & West's S. J. Hudgins 1, sw edge Hungerford, dry at 5768 ft, December, 1932. Cullen & West's Hawes 1, G. W. Singleton survey, 1 mi e Hungerford, dry at 6850 ft January, 1933.

Principal Lease Holders: Gulf Production Co., Cullen & West.

Leach

Location: 4½ mi s Hilje; East Texas R. R. Survey 58.

Discovery Data: Gas seeps and surface high; also torsion balance and reflection seismograph, Cockburn Oil Corp., 1931.

Extent of Development: Two old 1200-foot wells drilled without showings; one to 1600 ft reported to have stopped in sand which showed some gas and oil. March 15, 1933; Steed Production Co.'s Lurker 1, Section 58, shut down in shale at 5025 ft.

Principal Lease Holders: Steed Production Co., The Texas Co., Gulf Production Co., Alpha Petroleum Corp., Cockburn Oil Corp., Shell Petroleum Corp., Pure Oil Co.

Louise

Location: 3 mi se Louise; Morris & Cummings Survey, Section 25.

Discovery Data: Surface indications; also torsion balance, Pure Oil Co., 1928. Indicated to be structural rather than salt dome type prospect.

Extent of Development: First test following geophysical work, Pure's Stewart 1, Section 25, was drilling shale at 4875 ft March 15, 1933.

Principal Lease Holder: Pure Oil Co.

Mancha

Location: 9 mi nw El Campo; N. Mancha survey.

Discovery Data: Surface indications; logs of old wells; also torsion balance and seismograph, Stanolind Oil & Gas Co. and Houston Oil Co., 1931.

Geology: Structure rather than salt dome type prospect.

Extent of Development: The Texas Co. drilled several tests, deepest about 1600 ft. Gant & Teas' Laura Hahn 1, sw part survey, abandoned at 5550 ft in December, 1932; had gas showings at 3315 and 3350 ft.

North El Campo

Location: 3½ mi n El Campo; centering around H. & T. C. Survey 8.

Discovery Data: Surface geology; also geophysics.

Geology: Regarded as possibly a very deep salt dome.

Extent of Development: Smith & McDannald and Shell Petroleum Corp.'s Mitchell 1, w corner of survey, had gas shows at 3100, 3200, 3900, 4000, 5450 and 6400 ft, and on March 15, 1933, was shut down at 6750 ft.

Principal Lease Holders: Shell Petroleum Corp., Smith & McDannald.

Wharton-Fort Bend Counties

Oil Fields

Boling

Location: 2 mi e Boling; S. F. Austin 3-1/6 Lg., D. W. Anthony, Simon Miller and Jas. Scott surveys.

Discovery Data: Gas, sulphur water, indications. First production: The Texas Co.'s Taylor 3, Dec. 14, 1925, 10,000 bbls., 3338 ft.

Geology: Salt Dome. Top of cap rock 425 ft, salt 975 ft.

Producing Formations: Cap rock at 400 to 500 ft; Oligocene sands 2500 to 4000 ft. Also sulphur from cap.

Extent of Development: (Partly estimated) 413 tests; 308 oil, 105 dry.

Deepest Hole: Vacuum Oil Co.'s Hooper 1, dry 5317 ft, salt 1926.

Productive Area: About 150 acres (oil).

Production History: 1932 output 190,769 bbls., total to Jan. 1, 1933, 4,312,864 bbls. Beginning of March, 1933, field had 68 wells, 453 bbls.

Principal Lease Holders: Gulf Production Co., The Texas Co., Magnolia Petroleum Co., Weed-Gayle Oil Co., Sun Oil Co., Atlantic Oil Producing Co., Humble Oil & Refining Co., Boling Dome Oil Corp., Sinclair Prairie Oil Co.

Tabular History of Gulf Coast Oil Fields, Salt Domes and Prospects

Acadia Parish

Oil Fields

Jennings

Location: Irregular Sections 40, 41, 42, 45, 46, 47, 48, T-9s, R-2w.

Discovery Data: Elevation, gas escapes. First production: Jennings Oil Co.'s No. 1, Section 46, (later Gulf's Jennings-Clemont lease), blew in, August, 1901, spraying oil and sand in considerable quantity from 1882 ft.

Geology: Salt dome. Top of cap rock 2000 ft, salt 3716 ft.

Producing Formations: Pliocene-Miocene sands 1500-1900 ft; Miocene 2700-4500 ft; Oligocene 7225-7447 and 8613-8698 ft.

Extent of Development: 611 tests drilled, 506 producers, 105 dry.

Deepest Hole: Yount-Lee Oil Co.'s Houssiere-Latrielle 9, se flank, 8900 ft, dry, March, 1931.

Productive Area: About 275 acres.

Production History: 1932 output 295,441 barrels, total to Jan. 1, 1933, 49,970,967 barrels. At beginning of March, 1933, 40 wells had output around 759 bbls.

Principal Lease Holders: The Texas Co., Yount-Lee Oil Co., Gulf Refining Co., Abshire-Bolyard Oil Co., Ratcliff Oil Co., Port City Oil Co., Jennings Petroleum Co., E. L. Myers, Cline, Smith & Cline, E. F. Simms.

Prospects

Egan

Location: Section 30-9s-1w.
Discovery Data: Torsion, Calcasieu Oil Co., 1927.
Geology: Undetermined; presumed to be large minimum.
Extent of Development: Gulf Refining Co.'s Houssiere-Latrielle A-1 abandoned in shale at 5801 feet.
Principal Lease Holder: Gulf Refining Co. of Louisiana.

Iota

Location: Sections 25, 26, 35, 36-8s-2w.
Discovery Data: Seismic, Sun Oil Co., 1929. Undrilled.

North Iota

Location: Section 10-8s-1w.
Discovery Data: Torsion, Calcasieu Oil Co., 1929.
Extent of Development: Joint test by Calcasieu, Union Sulphur Co. and Magnolia Petroleum Co. abandoned in shale at 6629 ft, May, 1930.

Acadia-Jefferson Davis Parishes

Prospects

Riverside

Location: Sections 42-8s-2w; 42, 43-8s-3w; 59, 60, 61, 62-9s-2w; 37, 38, 39, 1-9s-3w.
Discovery Data: Torsion balance, 1930, Dr. Paul Briandt. Structure-type prospect. Undrilled.

Ascension Parish

Oil Fields

Darrow

Location: Section 27-10s-2e.
Discovery Data: Torsion, Gulf Refining Co., 1927. Discovery well drilled by Rio Bravo Oil Co., Community 1, depth 4035 ft, flowed 2400 bbls, Sept., 1932.
Geology: No cap or salt encountered.
Producing Formation: Miocene sand 4008-35 ft. One at 4747 indicated in well completing.
Extent of Development: 1 producer, 1932; 2 previous dry.
Deepest Hole: Gulf's Belle Helene Sugar Co. 1, 5604 ft, dry.
Productive Area: 1600 ft between discovery well and pending completion.
Production History: 1932 output 805 bbls. At beginning of March, 1933, the only producer was shut in.
Principal Lease Holders: Rio Bravo Oil Co. and Gulf Refining Co.
Remarks: Discovery well had six sands showing oil before encountering sand in which it was completed.

Sorrento

Location: Sections 14, 15, 22, 23-10s-4e.
Discovery Data: Seismic, Gulf Refining Co., 1926. Discovery well: Gulf's United Lands Co. 4, Feb. 1, 1929, 7000 bbls.
Geology: Salt dome, top cap rock 1568, salt 1920 ft.
Producing Formations: Cap 1615-1650 ft; Middle Oligocene at 4345 ft.
Extent of Development: 24 tests, 8 producers, 16 dry.
Deepest Hole: Gulf's United Lands Co. 15, 5725 ft, dry.
Production History: 1932 output 19,500 bbls, total to Jan. 1, 1933, 507,604 bbls. At beginning of March, 1933, one well had output of 47 bbls.
Principal Lease Holders: Union Sulphur Co., Gulf Refining Co. of Louisiana.
Remarks: First dome to produce east of Mississippi River.

Assumption Parish

Proven Salt Domes: No Production

Napoleonville

Location: Irregular Sections 41, 42, 45, 46-12s-13e.
Discovery Data: Seismic, Gulf Refining Co., 1926.
Geology: Salt dome, top cap rock 413 ft, salt 685 ft.
Extent of Development: 16 dry holes drilled 1926-31 (including 10 sulphur tests).
Deepest Hole: Gulf's Armalise Planting Co. 1, 6037 ft, water sand, abn.
Principal Lease Holders: Gulf Refining Co. of La., Union Sulphur Co.
Remarks: Sulphur tests by Union Sulphur Co. and Texas Gulf Sulphur Co.

Prospects

Avoca

Location: Sections 39, 40-14s-14e, 13, 24-14s-13e.
Discovery Data: Seismograph, Shell Petroleum Corp., 1928. Undrilled.

Calcasieu-Jefferson Davis Parishes

Oil Fields

Iowa

Location: Sections 7, 18-9s-6w, 12, 3-9s-7w.
Discovery Data: Seismic, Shell Petroleum Corp., 1929. First production: Vacuum Oil Co.'s Bert T. Waite 1, Jan. 30, 1931, 300 bbls, 5008 ft, deepened and completed Oct. 24, 1931, 3360 bbls, 6971 ft.
Geology: Regarded as deep salt dome although no dome material encountered.
Production Formations: Miocene sands at 5001 to 5008 ft; Middle Oligocene 6895 to 6983 ft.
Extent of Development: 6 tests drilled, all producers, 1931-32.
Deepest Hole: Shell's Heyd 2, 6983 ft, 23 bbls hour.
Productive Area: Not determined.
Production History: Produced 34,265 bbls, 1931, 488,996 bbls 1932, bringing total to 523,261 bbls. At beginning of March, 1933, field had five producing wells with combined output around 2259 bbls daily.
Principal Lease Holders: Shell Petroleum Corp., Magnolia Petroleum Co.

Prospects

Hayes

Location: Sections 28, 29, 32, 33-10s-5w.
Discovery Data: Seismic and torsion, Humble Oil & Refining Co. and Gulf Refining Co. of La., 1929. Undrilled.

Tabular History of Gulf Coast Oil Fields, Salt Domes and Prospects

Calcasieu Parish
Oil Fields

Edgerly

Location: Sections 20, 21, 28, 29-9s-11w.

Discovery Data: Gas escapes, paraffin dirt. First production: Bright Oil Co.'s Bright 1, 1911, 250 bbls, 27 gravity, 1500 ft.

Geology: Salt dome, top cap rock 3958, salt 4001 ft.

Producing Formation: Pliocene-Miocene sands at 2500 to 4200 ft.

Extent of Development: 235 tests drilled, 169 producers, 66 dry.

Deepest Hole: The Texas Co.'s Miller Estate 1, 6800 ft, heaving shale, abn.

Productive Area: About 150 acres.

Production History: 1932 output 69,556 bbls, total to Jan. 1, 1933, 8,141,772 bbls. At beginning of March, 1933, 21 wells had combined output around 223 bbls.

Principal Lease Holders: Gulf Refining Co. of La., Rex Petroleum Corp., Wilson & Broach, Hercules Oil Co., C. M. Crotty, Green Oil Co., The Texas Co., Moore & Emerson.

Lockport

Location: Sections 8, 9-10s-9w.

Discovery Data: Gas escapes. First production: Vacuum Oil Co.'s Miller 1, Sept. 39, 1924, no gauge, 3875 ft.

Geology: No cap rock or salt encountered.

Producing Formations: Miocene sands at 2200 to 2400, 2900 to 3400, and 4350 to 5000 ft; Miocene-Oligocene at 5000 to 5667 ft; Middle Oligocene at 6529 to 6668 ft.

Extent of Development: 116 tests, 95 producers, 21 dry.

Deepest Hole: Shell Petroleum Corp.'s Miller Estate 1, 7201 ft, dry.

Production History: 1932 output 968,170 bbls, total to Jan. 1, 1933, 10,873,591 bbls. At beginning of March, 1933, 28 producing wells, around 3483 bbls daily.

Principal Lease Holders: Magnolia Petroleum Co. and Gulf Refining Co. (jointly), Yount-Lee Oil Co., Union Sulphur Co.

Starks

Location: Sections 19, 30-9s-12w.

Discovery Data: Seismic, Gulf Refining Co., 1925. First production: Gulf's Lutcher Moore 4, 2500 bbls, 4200 ft, January, 1927.

Geology: Salt dome, top cap rock 1228 ft, salt 2218 ft.

Producing Formations: Miocene and Middle Oligocene sands at 4100 to 4800 ft.

Extent of Development: 65 tests, 25 producers, 40 dry.

Deepest Hole: Gulf's Industrial Lbr. Co. 13, 7207 ft, abn in shale.

Production History: 1932 output 289,700 bbls in 1932, total to Jan. 1, 1933, 1,371,324 bbls. At beginning of March, 1933, 17 wells, 933 bbls daily.

Principal Lease Holders: Gulf Refining Co. of La. and Standard Oil Co. of La., jointly.

Sulphur

Location: Sections 20, 29-9s-10w.

Discovery Data: Oil seepage. First production: Union Sulphur Co.'s Fee 719, Dec. 24, 1926, 150 bbls, 3350 ft.

Geology: Salt dome, top of cap rock 375 ft, salt 1460 ft.

Producing Formations: Miocene-Oligocene sands at 2800 to 5000 ft; Middle Oligocene at 5000 to 5705 ft.

Extent of Development: 60 tests, 44 producers, 16 dry.

Deepest Hole: Union Sulphur Co.'s Fee 762, 9250 ft, dry, April, 1931.

Production History: 1932 output 821,720 bbls, total to Jan. 1, 1933, 5,071,405 bbls. At beginning of March, 1933, 20 wells, around 935 bbls daily.

Principal Lease Holder: Union Sulphur Co., fee lands.

Remarks: Sulphur discovered in 1868; wells listed above include only tests made for oil after sulphur operations ceased. First sulphur production on coast and long world's most important supply.

Vinton

Location: Sections 3, 4-11s-12w; 33, 34-10s-12w.

Discovery Data: Surface indications. First production: Sabine Oil Co.'s Hunt 1, June 25, 1910, no gauge, 2230 ft.

Geology: Overhanging type salt dome. Top of cap rock 428 ft, salt 925 ft.

Producing Formations: Pliocene-Miocene sands at 2100 to 3600 ft; Oligocene at 3450 to 3500 ft; and Lower Oligocene at 3650 ft.

Extent of Development: 592 tests, 408 producers, 184 dry.

Production History: 1932 output 1,477,408 bbls, total to Jan. 1, 1933, 38,018,072 bbls. At beginning of March, 1933, 96 wells, around 3829 bbls daily.

Principal Lease Holders: Gulf Refining Co. of La., Vinton Petroleum Co., Edgerly Petroleum Co., The Texas Co., Seiss Oil Sydn., Marrs McLean, Wilson-Broach Oil Co.

Cameron Parish
Oil Fields

Black Bayou

Location: Sections 7, 8, 17, 18-12s-12w.

Discovery Data: Surface indications; seismograph, Shell Petroleum Corp., 1927. First production: Shell's Watkins 9, swabbed 30 bbls, 981 ft, April, 1929.

Geology: Salt dome, top of cap rock 884, salt 1701 ft.

Producing Formations: Miocene sands at 965 to 981 ft and 4193 to 4727 ft; Middle Oligocene at 5118 to 5263 and 6619 to 6638 ft.

Extent of Development: 30 tests, 8 producers, 22 dry.

Deepest Hole: Brownie-Babette Oil Co.'s R. A. Moore 1, 6642 ft, produced from 6638.

Productive Area: Not determined.

Production History: 1932 output 347,266 bbls, total to Jan. 1, 1933, 1,027,776 bbls. At beginning of March, 1933, 6 wells, around 658 bbls daily.

Principal Lease Holders: Shell Petroleum Corp., Brownie-Babbette Oil Co.

Cameron Meadows

Location: Sections 15, 16, 21, 22-14s-13w.

Discovery Data: Gas seeps; seismograph, Vacuum Oil Co., 1928. First production, Jan. 1931, Vacuum's Cameron Meadows Ln. Co. 1, spray of 30 grav. oil, 3850 ft.

Geology: No dome material encountered.

Producing Formations: Miocene sands at 3800 to 3850 ft and at 5235 to 5273 ft.

Extent of Development: 4 tests, 2 producers, 1 gas and 1 failure.

Deepest Hole: Magnolia Petroleum Co.'s Cameron Meadows 3, 5273 ft, 400 bbls, Feb. 1933.

Productive Area: Not determined.

Production History: 1931 output 20,154 bbls, 23,063 in 1932, total to Jan. 1, 1933, 43,217 bbls. At beginning of March, 1933, 1 well, 32 bbls daily.

Principal Lease Holder: Magnolia Petroleum Co.

East Hackberry

Location: Sections 13, 24, 36-12s-10w; 46-12s-9w.

Discovery Data: Surface indications; seismograph, Calcasieu Oil Co., 1926, First production, joint test of Calcasieu, Magnolia Petroleum Co. and Union Sulphur

Co., Caldwell 2, completed Nov. 1927, 1000 bbls, 3998 ft.

Geology: Salt dome, top cap rock 2955 ft, salt 3588 ft.

Producing Formations: Miocene-Pliocene sands at 2592 to 3046 ft; Miocene at 3800 to 4075 ft; Middle Oligocene 5990 to 6003 ft; sands at 8320 to 8324 ft.

Extent of Development: 147 tests, 95 producers, 52 failures.

Deepest Hole: Union Sulphur Co.'s Gulf Fee Pure Lease 1, 8324 ft, July, 1932.

Productive Area: Not fully outlined.

Production History: 1932 output 2,055,539 bbls, total to Jan. 1, 1933, 5,568,409 bbls. At beginning of March, 1933, 47 wells, around 7006 bbls daily.

Principal Lease Holders: Calcasieu Oil Co., Yount-Lee Oil Co., The Texas Co., Union Sulphur Co.

Hackberry

Location: Sections 16, 17, 21, 22, 27, 28-13s-10w.

Discovery Data: Elevation, gas seepage. First production: Cameron Oil Co.-Rycade Oil Corp.'s Duhon 1, Dec. 1, 1928, 200 bbls, 22 gravity, 3151 ft.

Geology: Salt dome, top of cap rock 1650 ft, salt 2078 ft.

Producing Formations: Miocene-Pliocene sands at 2950 to 3250 ft and 3275 to 3400 ft and at 3850 ft and at 4300 to 4350 ft and at 5660 ft.

Extent of Development: 138 wells completed, 44 producers, 94 failures.

Deepest Hole: Federal Petroleum Co.'s Hebert 1, 7834 ft, abn Sept. 1930.

Productive Area: Not delimited.

Production History: 1932 output 198,375 bbls, total to Jan. 1, 1933, 1,692,877 bbls. March 1, 1933, 29 wells, 897 bbls daily.

Principal Lease Holders: Yount-Lee Oil Co., Gulf Refining Co. of La., Humble Oil & Refining Co., Pure Oil Co., Rycade Oil Corp., Sunshine Oil Co., Rex Petroleum Corp., Federal Petroleum Co., Sun Oil Co., Moon Oil Co., Cameron Oil Co., Union Sulphur Co., R. E. Seiss, J. G. Sutton.

Sweet Lake

Location: Section 12-13s-8w.

Discovery Data: Gas seepages. First production: Pure Oil Co.'s Sweet Lake 1, Oct. 11, 1926, blew out and cratered, 4600 ft.

Geology: No dome material encountered.

Producing Formations: Miocene sands at 4457 to 4594 ft and 5125 to 5897 ft and 6784 to 6813 ft; sands at 7366 to 7387 ft.

Extent of Development: 17 tests, 8 producers, 9 dry.

Deepest Hole: Magnolia Petroleum Co.'s Sweet Lake Ln. Co. 2, abn Aug. 1932, 7714 ft.

Productive Area: Small, but not fully defined.

Production History: 1932 output 271,259 bbls, total to Jan. 1, 1933, 1,762,904 bbls. At beginning of March, 1933, 4 wells, 583 bbls daily.

Principal Lease Holder: Pure Oil Co.

Proven Salt Domes: No Production

Calcasieu Lake

Location: 1 mile due west of Section 36-13s-9w.

Discovery Data: Seismic, La. Ld. Ex. Co., 1927.

Geology: Salt dome, top cap rock 1490 ft, salt 2345 ft.

Extent of Development: 9 dry holes.

Deepest Hole: The Texas Co.'s Calcasieu Lake A-4, abn in lime rk at 5884 ft, Nov. 1929.

Principal Lease Holder: The Texas Co.

Prospects

Johnson's Bayou

Location: Section 6, T-15s, R-14w.

Discovery Data: Surface indications.

Extent of Development: 2 failures.

Deepest Hole: Yount-Lee Oil Co.'s W. H. Stark 1, 7657 ft, abn Jan. 1930.

Lake Misere

Location: Section 8-13s-5w.

Discovery Data: Seismic, Pure Oil Co., 1927. Appears to be structure type prospect. Undrilled.

Mallard Bay

Location: Sections 31, 32-12s-3w; 5, 6-13s-3w.

Discovery Data: Seismic, Shell Petroleum Corp., 1928. Other companies did not consider this a dome.

Extent of Development: one test, dry: Shell's A. Marceaux 1, Feb., 1930, 7229 ft.

Mud Lake

Location: Sections 28, 29, 32, 33-14s-11w.

Discovery Data: Seismic, 1927, Gulf Refining Co. and others; prospect was not checked in as definite dome, however, by Gulf or others. Undrilled.

Evangeline Parish

Oil Fields

Pine Prairie

Location: Sections 35, 36-3s-1w.

Discovery Data: Outcrop of limestone of cap rock. First production: Myles Mineral Co.'s No. 8, 1912, 1000 bbls, 1300 ft.

Geology: Salt dome, cap rock exposed at surface, salt 516 ft.

Producing Formations: Cap at 1300 ft and Miocene at 2340 ft.

Extent of Development: 35 tests, 4 producers, 31 dry.

Deepest Hole: The Texas Co.'s Guillory 2, abn 4832 ft.

Productive Area: Practically none.

Production History: Total production 20,000 bbls, none since 1918.

Iberia Parish

Oil Fields

Fausse Point

Location: Sections 26, 27, 34-11s-8e.

Discovery Data: Seismic, Gulf Refining Co., 1926. First production: Feb. 1927, Union Sulphur Co.'s Schwing 1, 325 bbls, 1150 ft.

Geology: Salt dome, top cap rock 1054 ft, salt 1104 ft. Top salt has been found high as 850 ft.

Producing Formation: Pliocene cap sand at 1123 to 1392 ft.

Extent of Development: 20 tests, 3 producers, 17 dry.

Deepest Hole: Gulf's Broussard 1, 5125 ft, dry.

Productive Area: Very little established.

Production History: Total 11,810; none since 1928.

Principal Lease Holder: Gulf Refining Co. of La.

Remarks: Was called Loreauville.

New Iberia

Location: Sections 51, 53, 54, 56-12s-7e.

Discovery Data: Elevation, gas seepages. First produc-

tion: La. Oil & Gas Co.'s Bernard 1, Lot 7-12s-7e, Jan. 5, 1929, 75 bbls, 18 gravity, 2631 ft.

Geology: Salt dome, top salt 805 ft; no cap rock.

Producing Formations: Pliocene-Miocene sands at 1900, 2631 and 3100 ft.

Extent of Development: 30 tests, 4 producers, 26 dry.

Deepest Hole: Two below 4000 ft by Houston Oil Co.

Productive Area: Very little proven.

Production History: Total recovery 72,347 bbls, most in 1917-18 and none since 1928.

Proven Salt Domes: No Production

Avery Island

Location: Sections 37, 38, 39, 53, 56-13s-5e; 55, 56, 57, 58, 59-13s-6e.

Discovery Data: Elevation above surrounding marshes, rock salt found May 6, 1862, by John Marsh Avery. No oil.

Geology: Salt dome, salt at 35 feet. No cap.

Producing Formations: Salt from salt plug.

Extent of Development: 3 tests, excluding salt operations.

Deepest Hole: La. Ln. & Explo. Co.'s Avery Isle 2, abn 1928 at 5873 ft. (?)

Productive Area: None as regards oil.

Production History: Salt but no oil.

Remarks: Salt being mined.

Jefferson Island

Location: Immediate area of Lake Peigneur, Twp. 13s-5e.

Discovery Data: Elevation, rock salt found in 1895 at 334 ft by Joseph Jefferson, noted actor. No oil.

Geology: Salt dome, top cap rock 78 ft, salt 80 ft.

Producing Formation: Salt from salt plug.

Extent of Development: 33 tests for oil and sulphur.

Deepest Hole: Jefferson Lake Oil Co.'s Lake Peigneur 10, abn salt 2270 ft. (?)

Productive Area: None as regards oil.

Production History: No oil production.

Remarks: Salt being mined; show of sulphur.

Vermilion Bay

Location: In Vermilion Bay near NEc Twp. 16s-5e (extended).

Discovery Data: Seismic, Louisiana Land & Exploration Co., 1917.

Geology: Salt dome, top cap rock 795 ft, salt 809 ft.

Extent of Development: 7 tests, all dry.

Deepest Hole: The Texas Co.'s State Vermilion Bay 5, 6528 ft, dry.

Productive Area: None.

Production History: None.

Principal Lease Holder: The Texas Co.

Weeks Island

Location: Sections 37, 38, 41, 42-14s-6e; 46, 47, 48, 49-14s-7e.

Discovery Data: Elevated above marshes, rock salt found by F. F. Myles, July 25, 1897, 276 ft. No oil.

Geology: Salt dome, salt at 100 ft, very little cap rock.

Producing Formations: None.

Extent of Development: 5 tests exclusive of salt development.

Iberville Parish
Oil Fields

Bayou Blue

Location: Sections 67, 72-9s-11e; 68, 74, 75-9s-10e.

Discovery Data: Seismic, Calcasieu Oil Co., 1926. First production, Sept. 1929, Standard Oil Co. of La.'s Wilbert 3, 15 bbls, 1925 ft.

Geology: Salt dome, top cap rock 2792, salt 2802 feet.

Producing Formations: Miocene Pliocene sands at 1945 and 3696 ft.

Extent of Development: 19 tests, 7 producers, 12 dry.

Deepest Hole: Standard's Schwing 6, abn Dec. 1931, 6579 ft.

Productive Area: Not defined.

Production History: 1932 output 1891 bbls, total to Jan. 1, 1933, 82,616 bbls.

Principal Lease Holder: Standard Oil Co. of La.

Choctaw

Location: Sections 52, 53-9s-11e.

Discovery Data: Seismic, Gulf Refining Co., 1927. First production: Standard Oil Co. of La.'s Gay 1, completed June, 1931, 3000 bbls, 4353 ft.

Geology: Salt dome, top cap rock 415 ft, salt 667 ft.

Producing Formations: Sands at 2435 to 2535 ft and at 4328 to 4353 ft.

Extent of Development: 16 tests, 3 producers, 13 dry holes, latter including over half dozen sulphur tests.

Deepest Hole: Standard's Gay 2, abn in salt water 6294 ft, May, 1932.

Productive Area: Not defined.

Production History: 1932 output 148,321 bbls, total to Jan 1, 1933, 248,410 bbls. At beginning of March, 1933, 3 wells, 301 bbls daily.

Principal Lease Holders: Standard Oil Co. of La., Texas Gulf Sulphur Co. (sulphur rights).

Remarks: Formerly called Bayou Choctaw; Grosse Tete.

White Castle

Location: Sections 1, 2, 3, 8, 9-11s-12e.

Discovery Data: Seismic, Shell Petroleum Corp., 1927. First production: Oct. 1929, Shell's Wilbert 3, 500 bbls, 5835 ft.

Geology: Salt dome, top cap rock 1810, salt 2313 feet.

Producing Formations: Miocene sands at 5165 to 5175 ft and 5700 to 5836 ft.

Extent of Development: 7 tests, 2 producers, 5 dry.

Deepest Hole: Shell's Wilbert 6, drilling 6655 ft, oil sand.

Productive Area: Not defined.

Production History: 1932 output 194,608 bbls, total to Jan. 1, 1933, 838,510 bbls. At beginning of March, 1933, 2 wells, 502 bbls daily.

Principal Lease Holder: Shell Petroleum Corp.

Proven Salt Domes: No Production

Bayou De Glaise

Location: Irregular Sections 78, 79, 85, 86-8s-8e.

Discovery Data: Seismic, Calcasieu Oil Co., 1927.

Geology: Salt dome, top cap rock 3478, salt 3697 ft.

Producing Formations: None.

Extent of Development: 8 tests, all dry.

Deepest Hole: Standard Oil Co. of La.'s Wilbert 8, abn March, 1931, 4295 ft.

Productive Area: None.

Production History: None.

Principal Lease Holders: Standard Oil Co. of La., Union Sulphur Co.

Tabular History of Gulf Coast Oil Fields, Salt Domes and Prospects

Jefferson Parish

Prospects

Barataria

Location: Section 2-16s-23e.

Discovery Data: Seismic, Humble Oil & Refining Co., 1928; other companies also shot. Later worked by torsion balance by Humble before drilling.

Extent of Development: One test, dry. Humble Oil & Refining Co.'s Delaware Fur. Co. 1, abn Nov. 1930, 7629 ft.

Jefferson Davis Parish

Oil Fields

Welsh

Location: Sections 21, 22, 27, 28-9s-5w.

Discovery Data: Elevation, gas seep. First production: Welsh Home Dev. & Oil Co.'s No. 2, 1902, blew out, 1000 ft.

Geology: No dome material encountered.

Producing Formations: Pliocene sands at 1000 to 1300 and 1783 to 3000 ft.

Extent of Development: 108 tests, 66 produced, 42 dry.

Deepest Hole: H. T. McClain et al's Trumbell Atterbury 1, abn March, 1931, 6075 ft.

Productive Area: Only partially defined.

Production History: 1932 output 14,327 bbls; total to Jan. 1, 1933, 554,824 bbls. At beginning of March, 1933, 4 wells, 32 bbls daily.

Principal Lease Holders: Yount-Lee Oil Co.

Prospects

Niblett Farms

Location: Sections 1, 12-11s-5w, and 6, 7-11s-4w.

Discovery Data: Torsion, La. Gulf Oil & Sulphur Co., 1930. Undrilled.

Roanoke

Location: Sections 13, 14, 24-9s-4w.

Discovery Data: Surface indications; torsion balance minimum, Vacuum Oil Co., 1928. Reflection seismograph also showed as definite high, although not necessarily a salt dome.

Producing Formations: None.

Extent of Development: 5 tests, dry; 1 drilling. Good showings and non-commercial oil and gas in some of abandoned tests.

Deepest Hole: Vacuum Oil Co.'s Devilbiss 2, abn 6631 ft.

South Welsh

Location: Sections 36-9s-5w, 31-9s-4w, 1-10s-5w, 6-10s-4w.

Discovery Data: Seismic, Pure Oil Co., 1929.

Extent of Development: Two tests, dry.

Deepest Hole: Pure Oil Co.'s A. F. & W. L. Day 1, abn 5216 ft.

Woodlawn

Location: Sections 7, 8, 17, 18-9s-5w.

Discovery Data: Seismic and torsion, Shell, Calcasieu Oil Co., Gulf, 1927. Did not decide it was a dome. Undrilled.

Lafayette Parish

Prospects

Carencro

Location: Section 33-8s-4e.

Discovery Data: Seismic, Pure Oil Co., 1930.

Extent of Development: 1 test, dry: Pure Oil Co.'s Manmotin 1, 6742 ft, abn May, 1930.

Gecho

Location: Swc 8s-6e, Nwc 9s-6e.

Discovery Data: Seismic, Calcasieu Oil Co., 1926. Undrilled.

La Fourche Parish

Oil Fields

Leesville

Location: Sections 26, 27-21s-22e.

Discovery Data: Seismic, Louisiana Land & Exploration Company, 1930. First production April, 1931. The Texas Co.'s La. Ln. & Explo. Co. 2, 480 bbls, 3046 ft.

Geology: Salt dome, top salt 4080 ft.

Producing Formations: Sands at 3040-46 ft, 3516, 3598 to 3681 ft, and 3717 ft.

Extent of Development: 10 tests, 8 producers, 1 failure.

Deepest Hole: Texas Co.'s La. Ln. & Explo. Co., Leesville 1, 5662 ft.

Productive Area: Only partially defined.

Production History: 1932 output 268,172 bbls, total to Jan. 1, 1933, 425,847 bbls. At beginning of March, 1933, 3 wells, with around 585 bbls daily.

Principal Lease Holders: The Texas Co.

Remarks: Was called Bayou La Fourche.

Proven Salt Domes: No Production

Chacahoula

Location: Sections 63, 64, 70, 71, 72-15s-15e.

Discovery Data: Seismic, Gulf Refining Co., 1927.

Geology: Salt dome, top cap rock 1035, salt 1302 ft.

Extent of Development: 38 tests, including for sulphur, all failures; sulphur show in cap rock.

Deepest Hole: Gulf's Stark et al 25, about 5000 ft.

Principal Lease Holders: Gulf Refining Co. of La. (sulphur rights sub-let to Texas Gulf Sulphur Co.), States Production Co., Union Sulphur Co.

Remarks: Was called Thibodeaux.

Prospects

Lake Bully Camp

Location: 61, 62, 63, 64-18s-21e, 32, 33-19s-21e.

Discovery Data: Seismic, Gulf Refining Co., 1928. Considered good prospect, but is undrilled.

Remarks: Same as Golden Meadows.

Bay Marchand

Location: Section 19-23s-23e.

Discovery Data: Seismic, Gulf Refining Co., 1928.

Extent of Development: 1 test, dry: Gulf's City of New Orleans 1, 6388 ft, 1930. This test not regarded, however, as condemning prospect, having been drilled possibly too far north. Southern Sulphur Co. preparing to drill about ¾ mi s of Gulf well although water is about 20 ft deep there.

Plaquemines Parish

Oil Fields

Lake Washington

Location: Sections 1, 2, 11, 12, 13, 14-20s-26e.

Discovery Data: Seismic, Humble Oil & Refining Co., 1928. First production: June, 1931, Humble's Cockrell-Moran 4, 500 bbls, 1158 ft.

Geology: Salt dome, top of cap rock 1094 ft, salt 1750 ft. Very large dome.

Producing Formations: Cap 1130 to 1158 ft.

Extent of Development: 11 tests, 3 producers, 8 failures.

Deepest Hole: Humble's Cockrell-Moran 2, abn in salt 5861 ft, March, 1931.

Productive Area: Not defined.

Production History: 32,44 bbls in 1931, 157,336 in 1932,

total 189,780 bbls. At beginning of March, 1933, 2 wells, 387 bbls daily.

Principal Lease Holders: Humble Oil & Refining Co., Gulf Refining Co. of La., and Shell Petroleum Corp. Freeport Sulphur Co. (sulphur rights).

Remarks: Was called Lake Grande Ecaille. Freeport installing sulphur mining plant.

Proven Salt Domes: No Production

Garden Island Bay

Location: Sections 107-23s-32e; 38, 39-23s-33e.

Discovery Data: Seismic, McCollum Exploration Co., 1928.

Geology: Salt dome, top cap rock 1691, salt 2017 ft.

Extent of Development: 7 failures drilled; oil and gas showings encountered.

Deepest Hole: The Texas Co.'s State Garden Isl. Bay 4, Feb. 1931, 5618 ft.

Principal Lease Holders: The Texas Co.

Venice

Location: Sections 21, 22, 23, 26, 27, 28, 34-21s-30e.

Discovery Data: Seismic, Gulf Refining Co. 1928.

Geology: Salt dome, top cap 2216 ft, anhydrite 2460 ft.

Extent of Development: 2 failures; both had gas blowouts while drilling.

Deepest Hole: Gulf Ref. Co.'s Buras Levee Board B-2, 2460 ft, March, 1930.

Principal Lease Holders: Gulf Refining Co. of La.

Remarks: Was called Rose, Spanish Pass.

Prospects

Lake Hermitage

Location: Section 1-18s-25e.

Discovery Data: Seismic, Gulf and Humble, 1928. Considered good prospect. Is undrilled.

Potash

Location: Se cor 18s-27e.

Discovery Data: Seismic, Gulf and Humble, 1928. Undrilled.

Quarantine

Location: Center of e edge 21s-22e.

Discovery Data: Seismic, Gulf and Humble, 1928. Indefinite prospect. Undrilled.

St. Bernard Parish

Prospects

Olevier

Location: Section 23-14s-14e.

Discovery Data: Geophysics, 1928, Petty Geophysical Engineering Corp.; also McCollum Exploration Co. and Gulf Refining Co. of La.

Extent of Development: 1 test drilling: Cook Drilling Co.'s Delecroix farms 1, drlg at 5238 ft, March 15, 1933. Southern Sulphur Co. moving rig to site in ne corner Lake Lery.

St. Charles Parish

Prospects

Lake Netherlands

Location: Section 33, 34-14s-22e.

Discovery Data: Seismic, Gulf Refining Co., 1928.

Lake Salvador

Location: Sections 12, 13, 14, 24-15s-21e; 7, 18, 19-15s-22e.

Discovery Data: Seismic, Gulf, Humble and others, 1928. Considered fairly good prospect. Undrilled.

Principal Lease Holder: Delta Securities Company.

St. Rose

Location: Se cor 12s-9e.

Discovery Data: Shell Petroleum Corp. was reported to have found salt dome here by seismograph about 1928. Later information indicates the report was erroneous, and that no dome was actually found. No drilling done.

St. Landry Parish

Oil Fields

Port Barre

Location: Sections 4, 20, 21-6s-5e.

Discovery Data: Seismic, Gulf Refining Co., 1926. First production, February, 1929, The Texas Co.'s Botney Bay Fee 1, 800 bbls, 3765 ft.

Geology: Salt dome, top cap rock 3551, salt 3831 ft.

Producing Formations: Oligocene sands at 3382 to 3427 ft and at 3638 ft. Sands at 3140 to 3190 ft, Oligocene sands at 3320 to 3427 ft, 3471 ft, 3593 to 3618 ft, and 3699 to 3717 ft.

Extent of Development: 31 tests, 20 producers, 11 dry.

Deepest Hole: Alex Rice, Trustee, S. W. Futral 1, abn in salt, 4600 ft.

Productive Area: Only partially determined.

Production History: 1932 output 555,071 bbls., total to Jan. 1, 1933, 2,016,499 bbls. At beginning of March, 1933, 13 wells, 1854 bbls. daily.

Principal Lease Holders: The Texas Co., Gulf Refining Co. of La.

Prospects

Eunice

Location: Section 14-6s-1e.

Discovery Data: Geophysics, electric method, Elbof Explorations, Inc., 1928.

Extent of Development: 2 failures.

Deepest Hole: Elbof's Valmont Ledoux 1, 4362 ft, 1930.

Garland

Location: Sections 48-4s-4e, 6-4s-5e.

Discovery Data: Seismic, Humble & Pure, 1929. Undrilled.

Washington

Location: Section 17, 38-5s-5e.

Discovery Data: Seismic, Pure Oil Co., 1929. Undrilled.

St. Martin Parish

Oil Fields

Anse La Butte

Location: Center Twp. 9s-5e.

Discovery Data: Elevation, gas. First production: Heywood Brothers' Fee 1, 1902, no gauge, 1350 ft.

Geology: Salt dome. Salt 240 ft, cap missing.

Producing Formations: Cap (Pliocene) sands at 900 to 2500 ft.

Extent of Development: 107 tests, 30 producers, 77 failures.

Deepest Hole: Yount-Lee Oil Co.'s Hebert 2, Aug. 1930, 6219 ft.

Productive Area: Only partially defined.

Production History: 1932 output 16,364 bbls., total to Jan. 1, 1933, 758,412 bbls. since 1902. At beginning of March, 1933, 3 wells, 36 bbls daily.

Principal Lease Holder: Yount-Lee Oil Co.

Bayou Bouillon

Location: Sections 13, 24-9s-8e; 18, 19-9s-9e.

Discovery Data: Gas seeps. First production: O. W. Heywood et al's No. 2, 1902, bailed some oil, 1089 ft.

Geology: Salt dome, top of cap rock 1504 ft, salt 1609 ft.

Tabular History of Gulf Coast Oil Fields, Salt Domes and Prospects

Producing Formations: Miocene sands at 3000 to 3400 ft and 4260 to 4341 ft.
Extent of Development: 47 tests, 9 producers, 38 failures.
Deepest Hole: Humble Oil & Ref. Co.'s Woodward 1, abn in sandy lime, 6471 ft, Jan. 1931.
Productive Area: Only small area proven.
Production History: Total 526,996, none in 1932.
Principal Lease Holders: Humble Oil & Refining Co., Rycade Oil Corp.
Proven Salt Domes; No Oil or Gas Production Developed.

Proven Salt Domes: No Production

Section "28"

Location: Sections 28, 29, 32, 33-9s-7e.
Discovery Data: Gas, paraffin dirt. Rock salt found in 1917 at 1250 ft by E. F. Simms, Lee Hager et al's No. 1. No oil.
Geology: Salt dome, top of cap rock 1122, salt 1250 ft.
Extent of Development: 13 failures.
Deepest Hole: The Texas Co.'s Iberville Ln. Co. 1, 6761 ft.
Principal Lease Holders: The Texas Co., Ohio Oil Co.
Remarks: Known also as Hager Dome.

Prospects

Bayou Chene

Location: Section 9, 10-10s-9e.
Discovery Data: Torsion, Calcasieu Oil Co., 1927; also seismograph. Considered good prospect. Undrilled.
Remarks: Also known as Lake Mongoulois.

St. Martin-Iberia Parishes

Prospects

St. Martinsville

Location: C S½ 10s-6e.
Discovery Data: Seismic, Bayou Teche Oil Co., 1930. Considered good prospect, despite drilling of dry hole.
Extent of Development: One failure: Harrison & Abercrombie's Burros 1-A, 6696 ft, 1931.

Spanish Lake

Location: C. S. boundry 11s-6e.
Discovery Data: Torsion, Humble Oil & Refining Co., 1928. Undrilled.

St. Mary Parish

Proven Salt Domes: No Production

Belle Isle

Location: Sections 1, 2-18s-10e; 25, 35, 36-17s-10e.
Discovery Data: Elevation above marsh. Capt. A. F. Lucas found rock salt in first test at 373 ft, Dec., 1896. Oil shows but no production.
Geology: Salt dome, top cap rock 145, salt 150 ft.
Extent of Development: 32 tests.
Deepest Hole: Freeport Sulphur Co.'s Belle Isle 1, abn in salt, 1853 ft, Aug. 1929.

Cote Blanche

Location: Sections 5, 6, 11, 12, 13, 14-15s-7e.
Discovery Data: Elevation above marsh, rock salt discovered by Southern Salt Synd. in 1921. No oil.
Geology: Salt dome, salt at 298 ft, no cap rock.
Extent of Development: 64 tests, no oil.
Deepest Hole: George Leland Co.'s Cafferey 1, 1675 ft.

Prospects

Charenton

Location: Section 41-14s-10e.
Discovery Data: Seismic and Torsion, Texas Co., 1930. Regarded as structure rather than salt dome.
Extent of Development: 2 failures.
Deepest Hole: The Texas Co.'s South Coast Co. 1, 7851 ft.

Glenwild

Location: Section 20, 21-15s-12e.
Discovery Data: Seismic, La. Ld. & Ex. Co., 1929. Showed up by seismograph as high, but not rather as structure than salt dome.
Extent of Development: 5 failures, including several old, shallow tests.
Deepest Hole: Louisiana Land & Exploration Co.'s L. P. Clarke 2, 5690 ft.

Morgan City

Location: Sections 25, 26, 35, 36-16s-12e.
Discovery Data: Seismic, Louisiana Land & Exploration Co., 1929. Showed up by seismograph as high, with probability of being structure rather than salt dome type.
Extent of Development: Several early tests were all failures; deep test also dry hole.
Deepest Hole: Louisiana Land & Exploration Co.'s Charles Fox 1, dry 6055 ft, Aug., 1930.
Principal Lease Holder: Louisiana Land & Exploration Co.

Patterson

Location: Section 21-15s-11e.
Discovery Data: Torsion, Vacuum & Empire, 1929; also checked later as fair "high" by seismograph.
Extent of Development: 1 failure: Empire Gas & Fuel Co. & Vacuum Oil Co.'s Oscar Zenor 1, 1930, 6365 ft.

Wax Lake

Location: Section 11, 12-17s-9e.
Discovery Data: Seismic, Pure Oil Co., 1929. Not considered promising prospect following deep test.
Extent of Development: 1 failure: Pure Oil Co.'s State Wax Lake 2, (No. 1 undrilled), July, 1930, 5902 ft.

Terrebonne Parish

Oil Fields

Caillou Island

Location: Sections 17, 18, 19, 20-23s-20e.
Discovery Data: Seismic, Louisiana Land & Exploration Co., 1928. First production Jan. 1930, The Texas Co.'s Caillou Island 2, 1100 bbls, 3239 ft.
Geology: Salt dome, top cap rock 2968, salt 4092 ft.
Producing Formations: Sands at 3239 ft and 3292 ft.
Extent of Development: 5 tests, 1 producer, 4 dry.
Deepest Hole: The Texas Co.'s State Caillou Island 5, abn salt 5665 ft.
Productive Area: Only slightly tested.
Production History: Produced 6005 bbls. in 1930.
Principal Lease Holder: The Texas Co.
Remarks: Was called Timbalier Bay.

Dog Lake

Location: Section 5, 6-22s-16e.
Discovery Data: Seismic, Louisiana Land & Exploration Co., 1928. First production May 1, 1929, The Texas Co.'s Dog Lake Bayou A-1, 15 bbls, 1062 ft.
Geology: Salt dome, top cap rock 1506, salt 1730 ft.
Producing Formation: Sand at 1062 ft.
Extent of Development: 8 tests, 1 producer, 7 dry.
Deepest Hole: Texas Co.'s Dog Lake Bayou B-2, abn 6347 ft, March, 1930.
Production History: 2925 bbls. in 1929-30.
Principal Lease Holder: The Texas Co.

Lake Barre

Location: Sections 26, 37, 38, 39-21s-19e; 30-21s-20e.
Discovery Data: Seismic, Louisiana Land & Exploration Co., 1928. First production Sept., 1929, The Texas Co.'s Lake Barre A-2, 1800 bbls., 3850 ft.
Geology: Salt dome, top cap rock 761, salt 852 ft.
Producing Formations: Miocene-Pliocene sands at 3645 to 3660, at 3670 to 3684, at 3693 to 3765, at 3782 to 3822 ft, at 3837 to 3870 ft, and at 3931 to 3980 ft.
Extent of Development: 21 tests, 19 producers, 2 dry.
Deepest Hole: The Texas Co.'s Lake Barre 8, abn 6790 ft, April, 1931.
Productive Area: Only partially defined.
Production History: 1932 output 2,766,558 bbls., total to Jan. 1, 1933, 4,241,504 bbls. since 1929. At beginning of March, 1933, 11 wells, 7530 bbls. daily.
Principal Lease Holder: The Texas Co.

Lake Pelto

Location: Section 8, 9-23s-18e.
Discovery Data: Seismic, Louisiana Land & Exploration Co., 1928. First production July, 1929, The Texas Co.'s Lake Pelto B-1, 400 bbls, 1285 ft.
Geology: Salt dome, top cap rock 2801, salt 2859 ft.
Producing Formations: Pliocene said at 1250 to 1288 ft, 1350 ft and 1733-65 ft.
Extent of Development: 12 tests, 4 producers, 8 dry.
Deepest Hole: The Texas Co.'s Lake Pelto B-3, abn 4775 ft, March, 1930.
Productive Area: Only partially defined.
Production History: 1932 output 20,727 bbls., total to Jan. 1, 1933, 138,960 bbls. At beginning of March, 1933, 1 well, 83 bbls daily.
Principal Lease Holder: The Texas Co.

Gas Field

Houma Gas Field

Location: Sections 5, 6, 7-19s-19e.
Discovery Data: Gas seeps and other surface indications.
Geology: No salt dome material encountered.
Producing Formations: Gas from shallow sands.
Extent of Development: Limited.
Deepest Hole: Southern Gas Co.'s Peoples Sugar Co. 1, (?), dry at 2287 ft.
Productive Area: Small.
Production History: Only gas.
Principal Lease Holders: Chas. Paggi, Southern Gas Co.

Proven Salt Domes: No Production

Bay St. Elaine

Location: Section 17-22s-18e.
Discovery Data: Seismic, Louisiana Land & Exploration Co., 1928.
Geology: Salt dome, top cap rock 710, salt 1463 ft.
Producing Formations: Gas sands 680 and 791 ft.
Extent of Development: 9 tests, 2 gas, 7 dry.
Deepest Hole: The Texas Co.'s State Bay St. Elaine 4, abn 5600 ft, Aug., 1930.
Productive Area: Small.
Production History: Only gas.
Principal Lease Holder: The Texas Co.
Remarks: Bay Coon Road.

East Bay Junop

Location: Sections 21, 22, 27, 28-21s-14e.
Discovery Data: Seismic, Louisiana Land & Exploration Co., 1927.
Geology: Cap rock at 5077 ft, no salt encountered.
Extent of Development: 4 dry holes.
Deepest Hole: The Texas Co.'s Bay Junop 2, 7034 ft.
Principal Lease Holder: The Texas Co.
Remarks: Bay Junop; Taylor Bayou.

Four Isle

Location: Section 22, 23-21s-16e.
Discovery Data: Seismic, Louisiana Land & Explortaion Co., 1928.
Geology: Salt dome, top cap rock 557, salt 1381 ft.
Extent of Development: 5 tests, dry.
Deepest Hole: The Texas Co.'s L. L. E. Four Isle 4, abn 6933 ft, Dec., 1930.
Principal Lease Holder: The Texas Co.

Prospects

Houma Townsite

Location: Section 102-17s-17e
Discovery Data: Geophysics.
Extent of Development: One test drilled in 1930-1931: Louisiana Gas & Fuel Co.'s Minor Estate 1, abn 6500 ft; had gas show at 1500 ft.

Minor

Location: Section 3-18s-16e.
Discovery Data: Seismic, United Gas Pub. Serv. Corp., 1931. Appeared to be structure-type prospect, like nearby Houma gas field rather than salt dome.
Extent of Development: 1 failure: United's Minor Estate 2, abn April, 1932, 6002 ft; had gas show at 3875 ft.

Pointe Au Fer

Location: Section 12-21s-12e.
Discovery Data: Torsion balance, Freeport Sulphur Co., 1930. Also showed later as a "high" by seismograph.
Extent of Development: 1 failure: Freeport Sulphur Co.'s Nelson 1, 6023 ft; no showings reported.

Vermilion Parish

Oil Fields

Gueydan

Location: Section 34-11s-1w.
Discovery Data: Seismic, Pure Oil Co., 1929. First production April, 1932, Pure Oil Co.'s Alliance Trust Co. 2, 200 bbls, 3552 ft.
Geology: Salt dome, top anhydrite 4772 ft.
Producing Formations: Sands at 3532 to 3552 ft, 3988 to 4029 ft.
Extent of Development: 6 tests, 4 dry, 2 oil.
Deepest Hole: Pure Oil Co.'s Southwest Land Co. 2, abn 8007 ft, Dec., 1931.
Productive Area: Only partially known.
Production History: 1932 output 194,884 bbls. At beginning of March, 1933, 2 wells, 593 bbls daily.
Principal Lease Holder: Pure Oil Co.

Prospects

Abbeville

Location: Section 68-12s-3e.
Discovery Data: Torsion, Atlantic Oil Producing Co., 1929. Also worked by seismograph.
Extent of Development: One test: Atlantic Oil Producing Co.'s Alfred Bowdoin 1, abn 5017 ft, Nov. 1929.

White Lake

Location: Sections 8, 9, 16, 17-15s-1e.
Discovery Data: Seismic, Louisiana Land, Gulf, Shell & Humble, 1929. Considered fair prospect. Undrilled.

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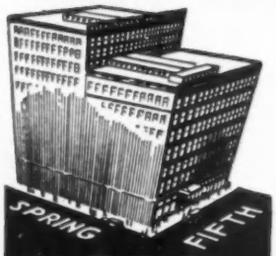

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MARKETS ~ STATISTICS

Oklahoma and Texas Open Up to More Than Double Loss in California During Quake; Mid-Continent Refined Market Holding Fairly Steady.

Texas and Oklahoma Both Offset California Loss

ALTHOUGH California registered a sharp decline in output, due to the severe earthquake which affected fields in the Los Angeles basin,* crude oil production for the United States as a whole increased by the large sum of almost 60,000 barrels, for the week ending March 18, averaging 2,157,835 barrels daily; Texas and Oklahoma being responsible for the increase, with each separately showing a gain practically offsetting the large decline in California.

During the latter part of the week California production dropped well below 400,000 barrels daily for the first time in about 10 years, but the average for the whole week was slightly higher, estimates of THE OIL WEEKLY indicating average output of about 415,000 barrels, as compared with 472,000 barrels daily the previous week.

Seal Beach and Dominguez fields were practically shut in the latter part of the week, while Long Beach, Huntington Beach, and Santa Fe Springs were producing far under their official allowables. Several major producers have ordered all wells in the Los Angeles basin shut in until pipe lines and equipment can be tested for earthquake damages.

The umpire's report showed an actual state production of 385,000 barrels on March 15, but of course such a low figure can not be maintained under conditions nearer normal. The net result of the earthquake may be future production around 450,000 barrels daily.

Greater than the decline in California was the increase in production in Texas, which rose to 893,665 barrels daily as compared with 822,895 barrels daily the previous week, due to large gains in the East Texas field and the Gulf Coast area. In both of those districts the increases arose in consequence of higher allowables authorized by the railroad commission. In its order of March 9 the commission provided for raising the East Texas quota from 290,000 barrels to 400,000 barrels daily effective March 19, but at the same time it announced that effective March 10 and until the effective date of the new order the per well allowable for the field would be 36 barrels daily, with about 9920 producing wells in the field.

Estimates based upon actually recorded production indicate that the East Texas field's output for the week ending March 18 was around 360,000 barrels daily, as compared with 303,500 barrels per day the previous week, boosted upward by the higher official allowable. It is those figures which have been used herewith in calculating the nation's production.

But as a matter of fact the field is reported to be producing large quantities of crude oil in excess of the amounts on which records are available, and such excess apparently assumed widening proportions during the past week, unofficial estimates crediting the field with having actually averaged 650,000 barrels daily for the week ending March 18 and around 450,000 barrels daily during the week of March 11.

Increasing production in Texas was not limited, furthermore, to the East Texas field. The Gulf Coast district averaged 142,200 barrels daily during the week of March 18 as against 126,550 barrels the previous week, a gain of over 15,000 barrels. That increase was accounted for by orders of the railroad commission raising the allowables of the Conroe and Rabb Ridge fields.

Oklahoma's production rise from 413,575 barrels daily the previous week to 456,700 barrels per day for the week of March 18 came largely in consequence of a 40,000-barrel gain at Oklahoma City, which averaged 148,100 barrels daily in the new estimate.

THE OIL WEEKLY
Estimated Average Daily Production of Crude Oil, in Barrels

District or State	Week Ending March 18	Week Ending March 11
TEXAS—		
Texas Panhandle	44,550	47,100
North and West Central Texas	75,850	75,900
West Texas	160,475	158,575
East Central Texas	59,700	59,270
East Texas Field	*360,000	*303,500
South Texas	50,890	52,000
Total Texas Outside Gulf Coast	751,465	696,345
Texas Gulf Coast	142,200	126,550
Total Texas	893,665	822,895
OKLAHOMA—		
Oklahoma City	148,100	107,650
Seminole Area	131,875	129,850
Others	176,725	176,070
Total Oklahoma	456,700	413,575
KANSAS—		
Ritz-Decker	25,025	26,510
Voshell	9,750	9,950
Others	80,945	77,380
Total Kansas	115,720	113,940
LOUISIANA—		
North Louisiana	32,300	31,425
Louisiana Gulf Coast	33,500	32,600
Total Louisiana	65,800	64,025
ARKANSAS	30,700	29,600
CALIFORNIA—		
Long Beach	50,000	67,000
Santa Fe Springs	45,000	53,000
Huntington Beach	17,000	27,000
Dominguez	9,000	18,500
Inglewood	11,000	12,100
Ventura Avenue	35,300	37,000
Seal Beach	3,000	8,700
Midway-Sunset	48,500	48,500
Elwood	13,000	13,200
Kettleman Hills	62,500	58,400
Playa Del Rey	11,000	12,200
Others	109,400	116,400
Total California	415,000	472,000
MOUNTAIN STATES—		
Wyoming	31,350	32,250
Montana	5,800	5,850
Colorado	2,550	2,600
New Mexico	37,100	37,100
Total Rocky Mountain States	76,800	77,800
EASTERN STATES	88,850	90,600
MICHIGAN	14,600	15,150
Total United States	2,157,835	2,099,585

***Estimates are that the East Texas field was being produced to the extent of 650,000 barrels daily through the running of illegal oil during week of March 18; and similar estimate for week ending March 11 indicated 450,000 barrels daily.**

Over-Production Continues Only Market Weakness

FAILURE of refined prices to fall off to a marked degree under the bank crisis and the apparent lack of any influence through overproduction of crude oil in Oklahoma City and East Texas, indicates a strong market condition which may be reflected during the coming week in increased demand and possibly slight increases over various portions of the price structure. Another point which should not be overlooked is the fact that prices showed very little weakness even in the face of a material reduction in demand during the bank moratorium.

Throughout the entire period of banking holidays contract movements continued at normal seasonal rate. Improvement in the psychological condition due to vigorous corrective action by President Roosevelt and his advisors, brought some inquiries for deferred shipments but it was not until definite announcement of the reopening of the banks that inquiries for prompt shipment began coming in. With actual reopening of practicaly all banks in Oklahoma, Kansas, and other states in the marketing district a distinct turn was observed. However, both sellers and buyers are treading cautiously probably awaiting clarification of the crude situation in Oklahoma and Texas.

Despite the executive military shutdown of the Oklahoma City pool from March 5 to 14, estimates of daily net crude movement in Oklahoma and Kansas

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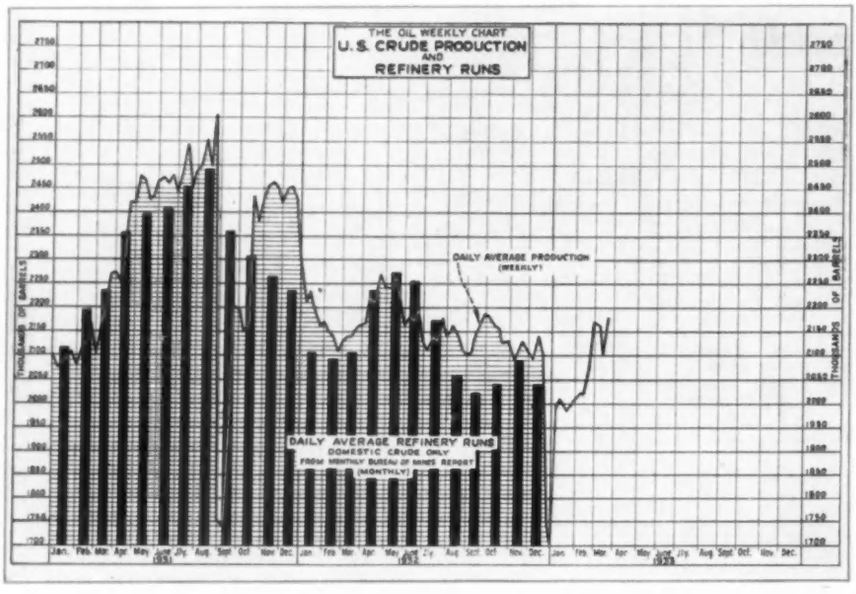


show 37,500 barrels daily to storage for the week ending March 8. This increase of approximately 10,000 barrels daily over the preceding week may be explained, however, by the fact that production in the Oklahoma City pool averaged a minimum of 235,000 barrels daily, or an excess of more than 80,000 barrels daily above the allowable during the period March 1 to 5. With a number of other pools in Oklahoma runnnig in excess of allowables, the effect of conditions at Oklahoma City is obvious when viewed in the light of diminishing demand and corresponding reduction in runs to stills. With a season of normally increasing demand at hand, an improved psychological condition, and the expected betterment of the proration situation in Oklahoma, it does not seem overly optimistic to predict better times in the near future in marketing circles.

Ruling prices, based on Oklahoma, Group 3, exclusive of the one-cent federal tax, appeared to be as follows:

Refinery Gasolines

Low octane U. S. Motor fuel 2⅛ to 2¼ cents; middle octane, 2¼ to 2⅜ cents; high octane, 2½ to 2⅝ cents; 60-62, 400 e.p., 2¼ to 2⅜ cents; 64-66, 390 e.p., 2⅜ to 2½ cents; 64-66, 375 e.p., 2⅝ to 2¾ cents; and 68-70, 350 e.p., 2¾ to 2⅞ cents.

Natural Gasolines

Low gravity, 11 to 12-pound vapor pressure, 3¼ to 3⅜ cents; 14 to 15-pound vapor, 2⅞ to 3 cents; 16 to 18-pound vapor, 2½ to 2⅝ cents; and 22 to 24-pound vapor, 2¼ to 2⅜ cents; and 27-70, 2⅛ to 2¼ cents.

Kerosenes

The 41 to 43 gravity, water white, 2½ to 2⅝ cents; 42 to 44 gravity, 2⅝ to 2¾ cents; and 44 to 46 gravity, 2⅞ to 3 cents.

Earthquake Disturbs Market As Well As Production

California output has dropped sharply as the result of the recent earthquake which centered near the Long Beach field. A much lower consumption was enough to become alarming, but the swift drop in three or four fields helped to fill the breach. The umpire announced that production dropped to around 435,000 barrels daily soon after the shock, and was hopeful that a much lower total would be recorded.

Governor Rolph has been asked to shut in the Long Beach field to pacify the people of the city of Long Beach. Many small operators are opposing such an order, and it may be difficult to obtain an executive order. It would have been an easy matter to have obtained acceptance of a complete shutdown order the day after the earthquake, but most small companies claim their wells were undamaged, and that there is no reason to shut the field down at this time.

The sharp decline in domestic consumption and refusal of several fields to meet their allowables were reasons for a lower crude oil schedule. The much lower crude production this week gives a strong hope that conditions will improve in the immediate future, and even higher crude prices would be possible with a genuinely lower crude oil output. The earthquake may be the direct means of obtaining an advantage long sought in several fields.

The picture in the Orient has changed considerably, and the Chinese tariff, Russian production situation and other conditions in the Far East have affected California exports. It is believed that Russia has been unable to supply as much oil as has been required in some sections in which both California and Russia compete. Japan has been very friendly with California interests, and one of the largest California refiners owns a half interest in one of the largest refineries in Japan.

No change has been observed in either the wholesale or retail gasoline quotations, but a lower consumption certainly has not strengthened prices. Use of the third grade product by the major companies has prevented price cutters from reducing retail prices very much. The larger companies are determined to post prices as low as the average of the lower priced dealers in the district, using the third grade gasoline as a weapon to prevent a collapse of the market and a price war.

Magnolia Draws Further on Oklahoma Crude Stocks

Dallas, Texas.—A reduction of 212,493 barrels, or a daily average of 7589 barrels made by Magnolia Petroleum Company in its Oklahoma crude stocks in February will likely be exceeded in March by reason of the temporary suspension of production in the Oklahoma City field. The latter field is the second largest source of crude supply for the company in Oklahoma. On March 1 the company reported a total of 7,290,212 barrels of oil in storage in Oklahoma, as compared to 8,484,103 barrels exactly one year previous.

Crude shipments made by Magnolia Pipe Line Company during February from fields in Oklahoma, Texas, Arkansas and Louisiana averaged 99,531 barrels daily, as compared to an average of 100,517 barrels the previous month. Runs from fields in Texas continue to exceed takings from all other states combined, with the East Texas field alone accounting for 917,781 barrels for the month.

Crude Runs to Stills, Motor Fuel Stocks, Gas and Fuel Oil Stocks and Cracked Gasoline Production, Week Ended March 11, 1933

(Figures in barrels of 42 gallons each)

DISTRICT	Daily Refining Capacity of Plants			Crude Runs to Stills		MOTOR FUEL STOCKS					Gas and Fuel Oil Stocks	Daily Charging Capacity of Cracking Units			Cracked Prod-tion Daily Average
	Potential Rate	Reporting Total	Reporting %	Daily Average	% Op-erat-ed	(a) At Refineries	(b) Bulk Terminals	(b) In Transit	(c) Other M. F. Stocks	Total Motor Fuel		Potential Rate	Reporting Total	Reporting %	
East Coast	644,700	638,700	99.1	444,000	69.5	5,903,000	7,680,000	1,738,000	425,000	15,746,000	6,545,000	344,400	326,400	94.8	83,000
Appalachian	144,700	135,000	95.0	72,000	53.3	1,398,000	368,000	.....	210,000	1,976,000	820,000	59,100	57,600	97.5	26,000
Ind., Ill., Ky	434,900	424,000	97.5	298,000	70.3	5,366,000	2,647,000	82,000	125,000	8,220,000	3,249,000	341,400	328,200	96.1	84,000
Okla., Kans., Mo	459,300	390,000	84.9	207,000	53.1	3,516,000	880,000	44,000	650,000	5,090,000	2,866,000	257,400	238,100	92.5	51,000
Inland Texas	315,300	177,700	56.4	86,000	48.4	1,374,000	36,000	.....	260,000	1,670,000	2,118,000	117,300	95,100	81.1	17,000
Texas Gulf	555,000	542,000	97.7	382,000	70.5	6,350,000	169,000	.....	300,000	6,819,000	6,349,000	506,500	495,500	97.8	81,000
Louisiana Gulf	146,000	142,000	97.3	118,000	83.1	1,443,000	262,000	.....	30,000	1,735,000	2,169,000	74,400	74,400	100.0	21,000
North La.,—Ark	89,300	79,000	88.5	50,000	63.3	230,000	44,000	.....	40,000	314,000	636,000	29,500	25,500	86.4	9,000
Rocky Mountain	152,000	138,000	90.8	35,000	25.4	1,523,000	.....	.....	30,000	1,553,000	618,000	71,400	68,100	95.4	7,000
California	915,100	866,100	94.6	406,000	46.9	12,667,000	.....	.....	2,430,000	15,097,000	99,080,000	197,700	197,700	100.0	28,000
TOTALS WEEK: March 11, 1933	3,856,300	3,532,500	91.6	2,098,000	59 4	39,770,000	12,086,000	1,864,000	4,500,000	58,220,000	124,450,000	1,999,100	1,906,600	95.4	407,000
March 4, 1933	3,856,300	3,532,500	91.6	2,024,000	57.3	38,223,000	12,490,000	1,112,000	4,500,000	56,325,000	124,012,000	1,999,100	1,906,600	95.4	414,000
Below are set out estimates of Crude Runs to Stills and Motor Fuel Stocks on B. of M. Basis for Week Mar. 11, 1933, compared with certain Mar. 1932 Bureau figures.															
Estimate B. of M. Basis Week March 11, 1933				2,195,000	(d)	40,370,000	14,350,000		4,500,000	59,220,000					440,000
U. S. B. of M. March 1932 Figures:—					3/1	46,638,000	13,412,000		4,690,000	64,740,000					
March 1932 Daily Average Crude Runs				2,210,000	3/31	47,235,000	14,248,000		5,320,000	66,803,000					
														March 1932 Daily Average Cracked Prod	432,000

(a)Stocks at refineries, except in California district, which includes stocks of finished gasoline and engine distillate at refineries, at water terminals and at sales distributing stations and any amounts in transit thereto.
(b)By districts, East of California only. In California, bulk terminal and in transit stocks are included under "At Refineries" heading. See note (a)
(c)Estimated. Includes motor fuel in pipe lines and unblended natural gasoline at refineries and plants, also blended M. F. at plants.
(d)Estimated to permit comparison with A. P. I. Economics Report which is on Bureau of Mines basis.

Imports of Oil Slightly Under Four-Week Average

IMPORTS of crude and refined oils at principal United States ports for the week ended March 11 totaled 982,000 barrels, according to American Petroleum Institute records, a daily average of 140,286 barrels, compared with 189,143 barrels daily the previous week and 149,000 barrels daily for the four weeks ended March 11.

The 982,000 barrels included 67,000 barrels received at Baltimore, 571,000 barrels at New York, 269,000 barrels at Philadelphia, and 75,000 barrels at other Atlantic ports, and consisted of 787,000 barrels crude oil and 195,000 barrels fuel oil.

Receipts of California oil at Atlantic and Gulf Coast ports for the week of March 11 totaled 330,000 barrels, or 47,143 barrels daily, compared with 20,857 barrels daily for the previous week and 49,679 barrels daily for the four weeks ended March 11.

Summarized Review of Week's Field Results

State	Completions	Oil wells	Gas wells	Failures	Initial prod.
Arkansas	0	0	0	0	0
California	1	1	0	0	1,500
Illinois	1	1	0	0	15
Indiana	0	0	0	0	0
Kansas	7	6	0	1	2,021
Kentucky	0	0	0	0	0
Louisiana	13	4	0	9	2,350
Michigan	3	2	1	0	650
Mississippi	0	0	0	0	0
New Mexico	2	2	0	0	9,230
New York	2	2	0	0	5
Ohio	8	4	2	2	92
Oklahoma	23	12	2	9	31,642
Pennsylvania	19	10	6	3	59
Texas	111	70	7	34	270,585
West Virginia	5	0	5	0	0
Miscellaneous	0	0	0	0	0
Total	195	114	23	58	318,149

Ohio Oil Company Earnings Small

Net income after adjustments of The Ohio Oil Company for 1932 was $7,242,981.30, equal to 58½ cents per common share. In 1931 the concern reported a loss of $21,488,763.11. These figures are from the consolidated income account of the annual report.

Union Oil Had Profit For 1932 Operations

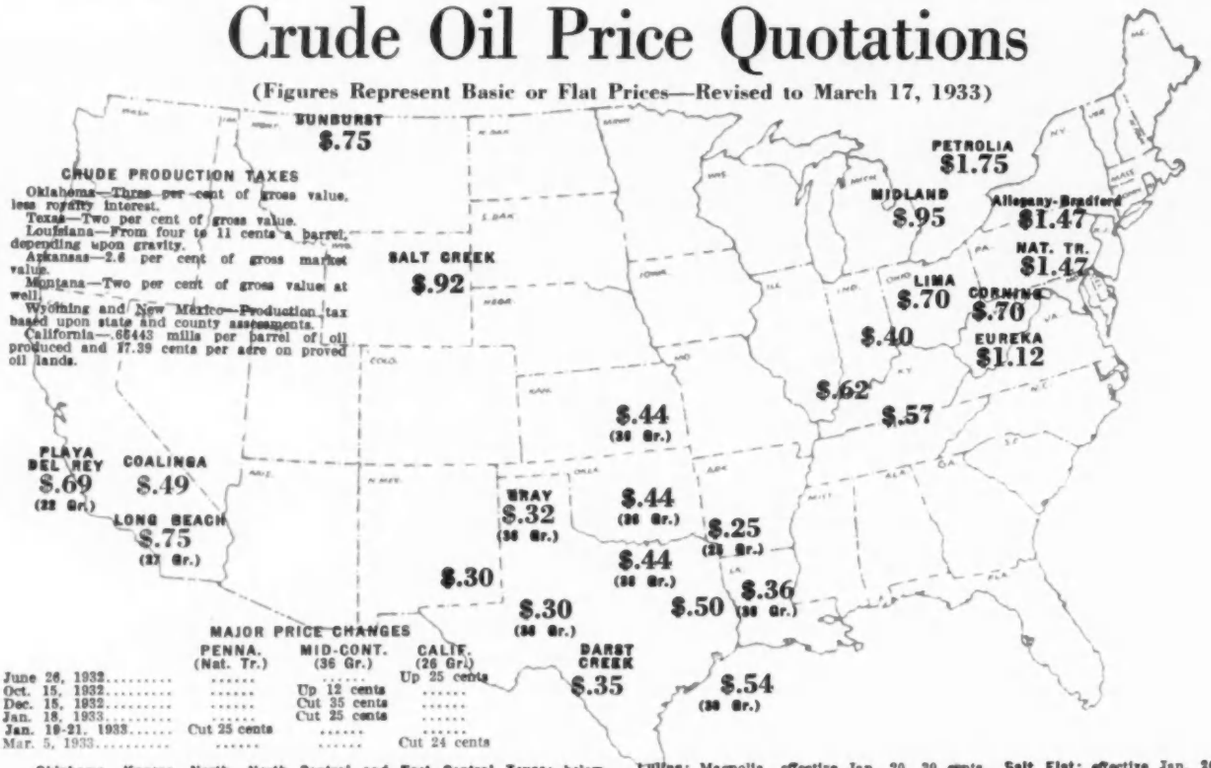
Profits of the Union Oil Company of California for 1932, before deducting depletion and depreciation charges, were equal to $2.31 per share on the 4,386,070 shares outstanding. This compares with profit of $2.30 per share for 1931. Net profit per share for 1932 was 73 cents per share against 70 cents in 1931.

Comparison of Permits Granted for New Wells

State	For week ending Mar. 11	Total this month	Total this year	This date last year	1932 year total
Arkansas	0	0	25	2	33
California	7	10	50	56	354
Louisiana	11	21	85	77	451
Kansas	12	20	93	103	463
Michigan	11	17	56	31	183
Oklahoma	18	37	190	167	1054
Texas	75	168	1211	1130	7099
Total	134	273	1710	1566	9637

Crude Oil Price Quotations

(Figures Represent Basic or Flat Prices—Revised to March 17, 1933)



CRUDE PRODUCTION TAXES

Oklahoma—Three per cent of gross value, less royalty interest.
Texas—Two per cent of gross value.
Louisiana—From four to 11 cents a barrel, depending upon gravity.
Arkansas—2.6 per cent of gross market value.
Montana—Two per cent of gross value at well.
Wyoming and New Mexico—Production tax based upon state and county assessments.
California—.06443 mills per barrel of oil produced and 17.39 cents per acre on proved oil lands.

MAJOR PRICE CHANGES

	PENNA. (Nat. Tr.)	MID-CONT. (36 Gr.)	CALIF. (26 Gr.)
June 26, 1932	.....	.....	Up 25 cents
Oct. 15, 1932	.....	Up 12 cents	.....
Dec. 15, 1932	.....	Cut 35 cents	.....
Jan. 18, 1933	.....	Cut 25 cents	.....
Jan. 19-21, 1933	Cut 25 cents	.....	.....
Mar. 5, 1933	.....	.....	Cut 24 cents

Oklahoma, Kansas, North, North Central and East Central Texas: below 29 gravity 28 cents, 29-29.9 gravity 30 cents, with 2-cent differential to top of 52 cents 40 and above: effective Jan. 18-20, 1933.

East Texas: Effective Jan. 18, 1933, 50 cents.

Corsicana, Texas, Heavy: Magnolia, effective Jan. 20, 1933, 30 cents.

Texas Panhandle: The Magnolia Petroleum Company, effective March 7, for Gray County, posted 30 cents per barrel for oil below 36 gravity, with 2-cents differential for each gravity degree up to 40 and above, which is 40 cents per barrel; for Carson and Hutchinson Counties, 36 gravity is 20 cents per barrel and differential of 2-cents beginning at 36 to 40 and above, which is 30 cents per barrel. March 6 The Texas Company posted for Gray County 30 cents for oil of 35 gravity with a 2-cent differential for each degree up to 40 and above, which is 40 cents. Carson and Hutchinson Counties on The Texas Company schedule begins at 20 cents for 35 gravity oil with 2-cent differential to and including 40 gravity and above, which is 30 cents.

Humble, effective Feb. 28, 1933, quoted range for Gray County from 30 cents for below 36 gravity, by 2-cent differential to 40 cents for 40 gravity and above; and for Carson-Hutchinson Counties 20 to 30 cents for same grades.

West Texas and New Mexico: Effective Jan. 19, 1933, by Texas Co., Jan. 20 by Humble, Shell, Magnolia, Gulf and others: 30 cents a barrel. Includes crude from Crane-Upton, Crockett, Ector, Howard-Glasscock, Pecos, Jones, Fisher and Winkler Counties, Texas, and Lea County, N. Mex.

Gulf Coast: The Texas Company, effective March 6, 1933, below 22 gravity 45 cents with one-cent differential to 64 cents for 40 gravity and above. **Humble, Gulf, Sun, and Atlantic, effective Jan. 20, 1933, below 20 gravity** 32 cents, 20-20.9 gravity 34 cents, with two-cent differential to 62 cents.

Cameron Meadows, Louisiana, Magnolia, effective Jan. 20, 1933, below 20 gravity 22 cents, 20-20.9 gravity 24 cents, with two-cent differential, ending with 34 gravity and above 52 cents.

Conroe, Texas: The Texas Co., effective March 6, 1933, 59 cents for 35-35.9 gravity, with one-cent differential upward to 64 cents for 40 gravity and **above. For same grades Humble, effective Jan. 20, quoted range of 54 to 64 cents using two-cent differential; while Tide Water posted a range of 59 to 64 cents, using a one-cent differential.**

South Texas:

Darst Creek: The Texas Co., effective Jan. 19, 1933, and Magnolia, effective Jan. 20, 35 cents; Humble effective Jan. 20, posted 40-cent price.

Luling: Magnolia, effective Jan. 20, 30 cents. Salt Flat: effective Jan. 20, 1933, Humble and Shell 40 cents. Lytton Springs: Magnolia, Jan. 20, 45 cents. **Mirando:** Humble and Magnolia, Jan. 20, Texas Co., March 6, 1933, 35 cents. **Pettus:** Humble, Jan. 20, 55 cents. **Refugio Heavy:** Humble and Atlantic, effective Jan. 20, 1933, 45 cents. **Refugio Light:** same as Gulf Coast.

North Louisiana and Arkansas:

Caddo, Homer, Haynesville, Bull Bayou, Sabine, Crichton, DeSoto-Red River, Cotton Valley, Sarepta, Cartersville, Pine Island, El Dorado, Rainbow Light: The Texas Co., effective Jan. 19, 1933, and Gulf and Louisiana Oil Ref. Co., effective Jan. 20: below 29 gravity 28 cents, 29-29.9 gravity 30 cents, with 2-cent differential to 52 cents for 40 gravity and above. **Standard: Caddo** below 29 gravity 20 cents, with 2-cent differential to 44 cents for 40 and above; **Homer** below 29 gravity 28 cents to 52 cents for 40 and higher; **Haynesville** below 29 gravity 19 cents and 2-cent differential to 43 cents for 40 gravity and above; **Sabine, DeSoto and El Dorado** below 29 gravity 25 cents with 2-cent differential to 49 cents for 40 gravity and above; **Sarepta-Cartersville** below 29 gravity 17 cents and 2-cent differential to 41 cents for 40 gravity and above. **Magnolia, effective Jan. 20, 1933, below 29 gravity 20 cents, 25-25.9 gravity 22 cents, with 2-cent differential to 44 cents for 40 gravity and above, except El Dorado (East), posted at 20 cents flat price.**

Smackover: The Texas Co., effective Jan. 19, 1933, and Gulf, effective next day: 30 cents; Standard of La. and Magnolia, effective Jan. 20, 20 cents; Louisiana Oil Ref. Co., effective Jan. 20, 25 cents.

Rocky Mountain States: (Effective December 16, 1932).

Salt Creek: Below 29 gravity 76 cents; 29-29.9 gravity 78 cents with differential of 2 cents each degree to 40 and above. Top price $1.00.

Elk Basin and Grass Creek: 87 cents; Big Muddy: effective Jan. 24, 1933, 50 cents; Lance Creek: 92 cents; Rock Creek: effective Jan. 24, 1933, 46 cents; Sunburst: effective November 7, 1932: 75 cents; Osage: 98 cents; Cat Creek: $1.20; Pondera: 90 cents; Hogback, New Mexico: 80 cents.

Mid-Western States: (Effective Jan. 18, 1933).

Lima: 70 cents. Indiana: 40 cents; Illinois: 62 cents; Princeton: 62 cents; Wooster: 70 cents; Western Kentucky: 57 cents.

Pennsylvania: (Effective Jan. 21, 1933).

Bradford District: $1.47; National Transit Oil: $1.47; Southwest Pennsylvania Pipe Line Oil: $1.17; Eureka Pipe Line Oil: $1.12; Buckeye Pipe Line Oil: 97 cents; Corning Crude: 70 cents.

Michigan: (Dec. 31, 1932). **Midland:** 95 cents. **Muskegon:** 76 cents to $1.00. **Canada:** (Effective Jan. 18, 1933). **Petrolia:** $1.75; **Oil Springs:** $1.82.

California—Posted by Standard Oil Company and Union Oil Company. Effective March 5, 1933, at 7:00 a.m.

Gravity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
14-14.9	$ .55	$ .53	$ .55	$ .55	$ .55	$ .55	..	..	$ .55	$ .55	$ .55	$ .55	$ .55	..	$ .49	$ .49	$ .49	$ .49	$ .49	$ .55	..
15-15.9	.55	.55	.55	.55	.55	.55	..	..	.55	.55	.55	.55	.55	..	.49	.49	.49	.49	.49	.55	..
16-16.9	.55	.55	.55	.55	.55	.55	..	..	.55	.55	.55	.55	.55	..	.49	.49	.49	.49	.49	.55	$ .49
17-17.9	.55	.55	.58	.58	.58	.58	..	..	.57	.56	.57	.55	.55	..	.49	.49	.50	.49	.49	.55	.49
18-18.9	.57	.55	.61	.61	.60	.61	..	..	.59	.58	.59	.55	.57	..	.49	.49	.52	.49	.49	.55	.49
13-19.9	.59	.57	.63	.64	.62	.64	..	..	.61	.61	.61	.55	.59	..	.49	.49	.54	.49	.49	.55	.49
20-20.9	.61	.59	.64	.67	.64	.66	..	..	.62	.63	.63	.55	.61	..	..	.52	.56	.49	.49	.56	.52
21-21.9	.63	.62	.66	.67	.66	.68	..	..	.64	.66	.65	.55	.63	$ .57	..	.55	.58	.51	.50	.57	.55
22-22.9	.65	.64	.68	.71	.69	.70	..	..	.66	.68	.67	.57	.65	.59	..	.57	.60	.53	.52	.58	.57
23-23.9	.67	.67	.70	.75	.71	.72	..	..	.68	.70	.69	.60	.67	.62	..	.60	.62	.55	.54	.59	.60
24-24.9	.69	.69	.72	.75	.73	.73	$ .65	..	.70	.73	.71	.62	.69	.64	..	.63	.63	.57	.56	.60	.63
25-25.9	.71	.72	.74	..	.75	.75	.68	O. B. Ship	.72	.75	..	.65	.71	.66	..	.66	.65	.59	.58	.61	.66
26-26.9	.73	.74	.75	..	.77	.77	.70	..	.73	.77	..	.68	.72	.69	..	.68	.67	..	..	.63	.68
27-27.9	.75	.76	.77	..	.79	.79	.73	..	..	.80	..	..	.74	.71	..	.71	.69	..	..	.65	..
28-28.9	.77	.79	.79	..	.81	.81	.75	..	..	.82	..	..	.76	.73	..	.74	.71	..	..	.67	..
29-29.9	.79	.81	.81	..	..	..	.78	..	..	.84	..	..	.78	.76	..	.76	.73	..	..	.69	..
30-30.9	.81	.81	.83	..	..	..	.81	..	..	..	..	..	.80	.78	..	.79	.75	..	..	.71	..
31-31.9	..	..	..	..	Subject to field gathering charge of 5c per barrel.	..	.83	..	..	..	22	..	.82	.80	..	.82	..	..	..	..	..
32-32.9	..	..	..	..		..	.86	..	..	..	..	..	.84	.83	..	.85	..	..	..	..	..
33-33.9	..	..	..	..		..	..	$ .83	..	..	.66	..	.86	.85	..	.87	..	..	..	..	..
34-34.9	..	..	..	..		..	..	.85	..	..	.68	..	.88	.87	..	..	..	..	..	..	..
35-35.9	..	..	..	..		..	..	.87	..	..	.70	..	..	.90	..	..	..	..	..	..	..
36-36.9	..	..	..	..		..	..	.89	..	..	.72	..	..	.92	..	..	..	..	..	..	..
37-37.9	..	..	..	..		..	..	.91	..	..	.74	..	..	.94	..	..	..	..	..	..	..
38-38.9	..	..	..	..		..	..	..	..	..	.76	..	..	.96	..	..	..	..	..	..	..
39-39.9	..	..	..	..		..	..	..	..	..	.78	..	..	..	..	..	..	..	..	..	..

1—Signal Hill. 2—Seal Beach, Alamitos Heights, Union posts to 26 at 74 cents. 3—Huntington Beach, Union posts through 26 at 75 cents. 4—Inglewood. 5—Playa del Rey, Union posts from 19, 62 cents, through 26 at 77 cents. 6—Olinda-Brea Canyon. 7—Athens-Rosecrans, Dominguez, Union posts through 35 gravity, 90 cents. 8—Elwood Terrace. 9—Torrance, Union posts only through 25 gravity. 10—Richfield, Union posts only through 25 gravity. 11—Whittier-LaHabra. 12—Montebello, Union posts only through 25 gravity. 13—Coyote Hills, Union posts only from 14 through 24 gravity. 14—Santa Fe Springs, Union posts only 24 through 35 gravity. 15—Newhall, McKittrick, Kern River. (See 16). 16—Midway-Sunset, Elk Hills, Buena Vista Hills, Union quotes 44 cents through 13 gravity and stops at 30 gravity, 79 cents. Union schedule applies this price to fields listed under 15. 17—Lost Hills, Union quotes 44 cents through 13 gravity. 18—Coalinga, Union quotes 44 cents through 13 gravity. 19—Wheeler Ridge, Union only. 20—Santa Paula, Union only. 21—Kettleman Hills.

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(Patented)

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No Excessive Drill Pipe Twist

This Improved Rotary Jar does not subject your drill pipe to excessive twist. Torque is controlled at rotary table to suit individual job requirements.

Adjusted Blow

The strength of the blow is graduated to suit the job, and is set at rotary table.

4 to 8 Blows Per Minute

The rapidity or spacing of blows is also controlled to suit requirements of each job and may be slow or fast, as desired.

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LEADERS MAKE PLEA FOR PRORATION

(Continued from page 8)

duction is on Texas alone, for while Texas production has increased that of Oklahoma and California has decreased. The rest of the country, he said, is doing a better job.

He is hopeful of the national conference called by President Roosevelt.

He pointed out that the group came here to confer and consult, and not to dictate. They are now going on to Oklahoma for another conference.

When Harry F. Sinclair was introduced he received an ovation from the assembly which demanded a speech.

He declared that he had only recently been converted to proration, orderly production and conservation, and agreed that they were lovely in theory, but he was doubtful of the results from practice.

"They licked me," he said, turning to the other major company representatives on the platform, and got him to come in on it.

He declared that they had the bear by the tail, but had not been able to get him in the cage. They had told him to hang on a little longer and they would get him in, so he will stick with them.

However, he said they must have full cooperation, as without this proration has had its last chance.

"If we can not get together the Sinclair Company will have to seek some other system to remedy the situation," he added.

He does not believe the laws can be enforced without cooperation, but is willing to play ball. However, time is the essence of the situation, and the solution must be found soon.

Texas Out of Line

R. C. Holmes, president of The Texas Corporation, stated that the entire industry is in sympathy with the purpose of conservation.

He said that there are only 20,000,000,000 barrels of known reserve in the United States today. It is being consummed at the present time at the rate of 1,484,000,000 barrels per year. New reserves must be found within the next 12 years, as 40 years will be required to produce the known reserve, and more oil will be needed to meet the consumption.

At present 85 per cent of all the machine horsepower in the United States is driven by gasoline.

He urged a neighborly attitude on the part of Texas, and that it produce no more than a fair share of the oil. This will serve better the interest of all producers. The market must be shared to insure conservation. Texas must be reduced to a fair portion of the world production. The excess runs in Texas now equal the total production of Kansas or of the eight oil producing states east of the Mississippi.

In a vehement speech, accompanied by arm waving, invectives, references to the "octopi" and the attorney general's suit against the American Petroleum Institute and major oil companies, John Boyle, San Antonio attorney, who acted as attorney for the Texas Railroad Commission in the recent House investigation, denounced the major oil company executives seated just behind him on the rostrum.

Boyle spoke under the invitation issued by the House of Representatives to any independent operator or representative who choose to express himself. Boyle started his speech by saying that he was not an oil man.

Boyle made reference to anti-trust suits pending against some of the major companies with sweeping gestures which could be taken to include all on the rostrum. He accused the American Petroleum Institute of being behind the proration idea, giving R. C. Holmes, president of The Texas Company credit for saying that Judge Ames was the "daddy" of the idea. Incidentally, Mr. Holmes had not made such a statement.

Law of Capture Sound

Referring to statements made by Holmes as to the amount of money his company had invested in Texas, Boyle shouted "Where did these 'octopi' get their millions?" He denounced proration, and commenting on the coming meeting of governors of oil states or their representatives in Washington at the request of the Secretary of the Interior, he denounced the idea and said that it would lead to federal control.

His entire address was a criticism of major companies. He referred to Judge Ames remarks on the old "law of cap-

D. A. Little Heads Magnolia; Brown Made Board Chairman

Dallas, Texas.—Elevation of the two senior officers of the Magnolia Petroleum Company to the heretofore unfilled position of chairman and vice-chairman of the board of directors has afforded important promotions for two younger officials of the company. D. A. Little, vice-president and assistant general manager, was elected president at a meeting of the directors here March 16, succeeding E. R. Brown, one of the founders of the company, who becomes chairman of the board. The latter position has remained unfilled since the death in February, 1926, of John Sealy, first president of the company.

D. A. LITTLE

Ralph H. Kinsloe, vice-president, assumes the added responsibility of general manager of the company, succeeding Ben H. Stephens, who becomes vice-chairman of the board, a newly created position.

A meeting of stockholders of the company reinstated all directors. Former officers of the Magnolia Petroleum Company and Magnolia Pipe Line Company were re-elected, with the exceptions noted.

Announcement was made that Messrs. Brown and Stephens will continue to be actively identified with the affairs of the Magnolia Petroleum Company.

Promotion of Mr. Little to the presidency of the company occurred on the nineteenth anniversary of his services with the organization. He was born on a farm near Corsicana, Texas, and his first position with Magnolia Petroleum Company was in the accounting department. Kinsloe began as a workman at the Corsicana refinery in 1904, and was retained when the ownership and name of the company changed. He was transferred to Beaumont in 1913 to become assistant plant manager, and continued in that capacity until his transfer to Dallas in August, 1928.

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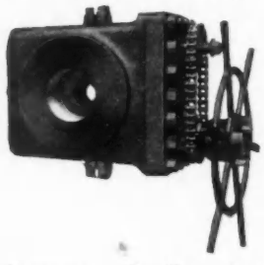

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ture" and made his own references to the law of private property. He said that the shades of Jim Hogg and Joe Bailey and Thomas Jefferson would be greatly perturbed at the picture of the representatives of the "octopus" having the audacity to come into the House of Representatives and attempt to trade with the lawmakers of the state. He said that the major companies proposed a capitalistic socialism, but that if he had to have socialism he would take it straight.

He closed by saying that he was not there as a representative of predatory interests whose actions including that of the American Petroleum Institute, were already involved in suits against them by the Attorney General of Texas.

The general tenor of his talk was that the representatives of the major companies present were responsible for the situation in the oil industry, that they had sponsored a proration idea that was working against the interests of the independent producer, and embodied advice to the legislators that they pay no attention to them. His speech was roundly applauded by member legislators and visitors.

Byles Smooths Water

Axtel J. Byles, president, Tide Water-Associated Oil Company, answered Boyle courtesly, stating that the committee of the American Petroleum Institute accepted the invitation of the House for the reason that "duty called." He said:

"I should have not left my desk in New York but this country now has leadership and I want to do all I can to asist in that leadership. I am a poor country boy, born in Pennsylvania; a hired man; a trustee for my stockholders; and I am going to follow my leader."

Byles went ahead to say that Ames did not invent proration—that Seminole "came along" and with it came proration. He said:

"I looked askance at it in the beginning but finally decided to give it one try, like I might do anything else."

He said that if he could "sit down for one hour" with Boyle, he believed he could convince him that he was wrong—that there is a law of private property and a law of the jungle and that under the law of the jungle there could be no price—merely a case of the survival of the fittest, and "heaven forbid" that. He said that his company had 100,000,000 barrels of oil in Texas and that it had to buy two barrels for every one it produced in this state but that it expected to protect its own interests under all conditions. He explained that markets are governed by the "last barrel of potatoes sold, the last bale of cotton sold, and consequently the last barrel of oil sold." He said that present market conditions were unfavorable to profitable operation in the oil industry.

Referring to Ames' statement that the A. P. I. "might" agree to offer a dollar a barrel for crude if production were cut to the market demand, if the anti-trust statutes permitted, which statement was severely ridiculed by Boyle, Byles said he would never agree to such a program—because it would not work.

Bowen Lines Announce Fast Chicago Schedule

Houston.—Only eight hours and 45 minutes are required to fly to Chicago on the schedule recently announced by the Bowen Air Lines, Inc., and their connecting line, Braniff Airways.

Fast Lockheed planes are used and only three stops are made between Houston and Chicago. The Bowen plane leaves Houston at 12:01 p.m. daily and arrives in Dallas at 1:50 p.m. Departing immediately, Tulsa is reached at 3:55 p.m. where passengers board the Braniff Lockheed for arrival in Kansas City at 5:35 p.m. and Chicago at 8:45 p.m.

The fastest air schedule to New York from Houston is available by leaving Chicago at midnight on United Air Lines and arriving in New York City at 7:32 a.m., approximately 18 hours from Houston.

By using an overnight train from Houston to Dallas passengers board the Bowen plane leaving Love Field, Dallas, at 8:30 a.m. for early morning and afternoon arrivals in Tulsa, St. Louis, Kansas City, Chicago, Columbus, Cleveland, Pittsburgh, New York, and many other Northern and Eastern cities.

The Bowen Line is a Texas organization headed by Temple Bowen of Fort Worth where the air company's general offices and maintenance shops are located. The line is well on its third year of operation and up to this date has flown more than three million miles and carried nearly 50,000 passengers. Besides the Houston, Dallas, Fort Worth, Tulsa line, Bowen also operates between San Antonio, Austin, Fort Worth, Dallas, and Oklahoma City.

Garwood Wildcat Tests Salt Water at 4117 Feet

Houston. — Prospects of Garwood dome, Colorado County, received a slight blow this week when a drill stem test at 4117-62 feet in Humble Oil & Refining Company's John R. McLane 1, Section 42, I&GN RR. Survey, showed salt water.

Another Colorado County wildcat, Pilot Oil Company of Dallas' Tait 1, drilled on a 27,000-acre block centering on the Cook and Dewees Surveys, dropped out of the picture when it was abandoned at 5025 feet in sandy shale.

Crown Central May Be Integral Unit

Houston.—Subsequent to the recent integration by Pan-American Petroleum & Transport Company, of Mexican Petroleum Corporation, American Oil Company and its subsidiary, Lord Baltimore Filling Stations, Inc., rumor in petroleum circles in Houston has it that Crown Oil and Refining Company, Houston, will become a part of the organization. Further, rumors run to the effect that Crown Oil & Refining Company will see an important expansion program at its refinery at an early date and that a total of 20 cracking and distillation units will be erected. Other reports state that one large equipment designer and manufacturer is now fabricating 30 pressure drums for use at the Houston plant. Still further rumors state that the official announcement covering future ownership of Crown Oil & Refining Company, and future enlargement and expansion at the refinery will be given out on March 23. Under present conditions it is stated that a major expansion program will take place at the Houston refinery and that Pan-American Petroleum & Transport Company will not build a plant on its Texas City Bayshore property purchased two or three years ago.

Joe Burt Will Drill Two Flank Tests at Batson

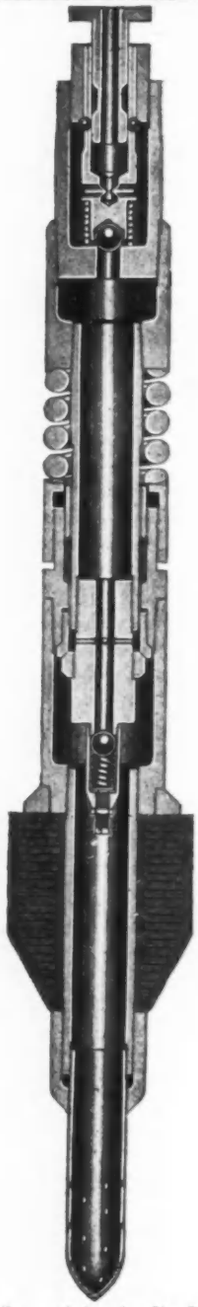
Houston.—Joe H. Burt of Dallas and Houston is reported to have made a deal with Danciger Oil Refining Corporation calling for drilling of two 5000-foot tests on the flank of Batson field, Hardin County. One test will be located on each of two 500-acre units going to make up a thousand-acre block recently acquired by Burt.

Daily production of Batson, one of the older domes of the Texas sector of the Gulf Coast, has dropped to about 600 barrels. It is shallow production.

Deepest Galveston County Well Abandoned at 7119

Houston.—The deepest well ever drilled in Galveston County was completed this week when Humble Oil & Refining Company abandoned Elias V. Rosenkranz 1 at 7119 feet. It is a wildcat in the Sarah White Survey.

Rosenkranz 1 spudded early in September, 1932. Operations were halted at 2022 feet to set 13⅜-inch casing, and again at 6951 feet to set another string. The latter part of November shale was encountered at 7119 feet. Chemicals failed to remedy the heaving formation difficulties. Casing was milled through at 6632 feet and drilling carried down to 7101 feet a second



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time. After washing to bottom and trying several remedies, Humble bowed to the heaving shale, tearing down the rig.

Rosenkranz 1 originally was slated to go to 8000 feet for a thorough test of Green's Lake prospect.

No Flush Oil Expected Soon From Manvel Field

Houston.—Considering abandonment late this week of Alpha Petroleum Corporation's Nichols 1-A at 3740 feet at Manvel field, Brazoria County, it probably will be a month before any new oil will be added in that area, which now produces around 600 barrels daily.

The Texas Company, discoverer of the field, has two tests underway at Manvel. Davis 1 is rigged up and ready to spud. Natali 1 is standing with 13⅜ inch casing cemented at 1275 feet.

The remaining operation at Manvel, Burton Drilling Company's Sherwood 1, H. N. Little Survey, is shut down at 4130 feet.

Buckeye Well Averaging 1575 Barrels Per Day

Houston.—Production from the second well at Buckeye, Matagorda County, held steadily at an average of 1590 barrels per day during the week, performance much better than was anticipated, considered the rather unsatisfactory production life of the discovery well. United North & South Development Company's St. L.B.&M. RR. 1 was producing during the week through a three-eighths inch choke showing a pressure of 675 pounds. The depth is 7858 feet, compared with 7926 feet for the discovery well, which is being worked over.

Other operations of United North & South under way at Buckeye include Plotner 1, ready to spud; Stoddard 1, Unit 6, drilling below 5266 in shale and lime.

Another Spurger Wildcat Hits Salt Water Sand

Houston.—Republic Production Company and Houston Oil Company's joint efforts to develop oil production in the Spurger gas area of Tyler County met with another reverse this week when Kirby Lumber Company 1 E-1016 showed salt water on a drill stem test with the tool at 4852-62 feet. Drilling had continued below 4821 feet at latest reports.

These operators' Sam Jeffcoat 1, also in the Spurger area, stands a derrick, while Kirby Lumber Company 1 E-1017 stands temporarily abandoned at 5019 feet in water sand.

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SPECIALIZING IN GULF COAST SEISMOGRAPH SURVEYS

Half of Pipe for Channel's Line from Conroe Arrives

Houston.—Approximately 50 per cent of the eight-inch line pipe to be used in the construction of the Channel Transport and Marketing Company's crude line from the Conroe field to Norsworthy terminal, located on Houston Ship Channel, has arrived.

Freddell Construction Company of Denver, Colorado, has the contract to lay this line, which will involve the welding of about 34 miles of pipe and the program calls for its completion within 45 days.

The line will have a capacity of 24,000 barrels daily, using only one main line station, which will be equipped with two Goulds centrifugal pumps rated at 24,000 barrels each, driven by 300 H.P. Westinghouse motors. Two 20,000-barrel steel tanks have been purchased for the Conroe station and plans are to also erect a 55,000-barrel tank.

E. M. Closuit, Dallas, is vice-president and general manager of this new pipe line concern.

Rabb Ridge Allowable Is Increased to 16,500 Barrels

Austin, Texas.—Effective March 13, the Texas Railroad Commission set the allowable of the Rabb Ridge field in Fort Bend County at 16,500 barrels per day, effective until April 1, 1933.

The old allowable was 9000 barrels per day. Representatives of operators in the field declared that the market demand for production from this field had increased 7500 barrels since the last order was issued, on January 3, 1933.

Nineteen Producers Are Completed in Gulf Coast

Houston.—The anticipated drop this week in flush oil contribution from the Gulf Coast of Texas was realized, but completions were sufficient to bring initial production up to 37,810 barrels, or approximately 70 per cent of the peak week's initial of 53,247 barrels. Nineteen oil wells were completed, 18 of them being in Conroe field.

Based on the number of wells on the sand in the Gulf Coast of Texas, indications are initial production and field results for the coming week will about equal those of this week.

April should see a pick up in field activity and completions in Rabb Ridge field, controlled mainly by Humble Oil & Refining Company and Gulf Production Company, due to an increase in the allowable from 9000 barrels to 16,500 barrels, effective March 13.

A detailed list of completions in the

Texas section of the Gulf Coast follows:

Company, Well and Location	Init. Prod. Bbls.	Depth
Colorado County—		
Pilot Oil Co., Tait 1, Cook & Dewees sur	*	5025
Conroe Field—		
Alpha Pet. Corp., Keystone Mills 2	2448	5092
Houston Oil Co. & Tide Water Oil Co., R. L. Cartwright 6	200	5177
Humble Oil & Ref. Co., B. E. Jones 1	2544	5136
Madeley 31	1896	5149
Madeley 34	1848	5155
Moore 9	1656	5140
H. N. Moore 10	2400	5138
H. N. Moore 27	2664	5135
So. Tex. Dev. Co. A-43	2208	5174
McAlbert Oil Co., Keystone Mills 1	2472	5060
Skelly Oil Co. & Conroe Oil Co., So. Tex. Dev. Co. 2	2380	5130
Southland Oil Co., T. L. Cummings 4	1440	5102
Gulf Coast Drilling & Prod. Co., Keystone Mills 1	1320	5073
The Texas Co., Mrs. Elizabeth Moody 16	2160	5114
Mrs. Elizabeth Moody 19	2040	5124
Tidewater Oil Co. & G. W. Strake, C. M. Dean 2	2688	5085
C. M. Dean 3	2400	5085
Lewis Estate 12	2400	5153
Fort Bend County (Pilant Lake)—		
Lowrie & Young, Jackson Brown Est. 1, Barrett & Harris sur	*	5832
Rabb Ridge Field—		
Humble Oil & Ref. Co. & Gulf Prod. Co., George A-4	646	5365

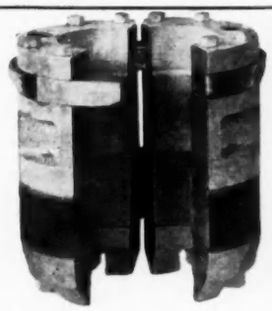
*Failure. †Junked. ¶Million cu. ft. gas.

Leasing Continues "Hot" Around Hufsmith Play

Houston.—Hufsmith district of Harris County is staging a campaign of leasing and royalty taking seldom equalled in the Gulf Coast.

This week's development at Hufsmith (and Tomball) bring mention of a $150,000 cash deal involving acreage and royalty in the district. Mention is also made of Humble Oil & Refining Company's participation in the play to the extent of $122,000 cash for 608 acres leases and royalty interests in the David Bruton et al 608-acre tract. Gulf Production Company is said to have taken 1790 acres in the heart and on the flank of the play at prices varying from $25 to $200 per acre, giving over-riding royalties ranging from 1/24 to 1/32.

Three immediate tests are scheduled or underway for the area. D. P. M. Corporation's Malcomson 1, A. Shouten Survey, is moving in materials on a 283-acre tract. The well will be drilled by Polk



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Drilling Company. Magnolia Petroleum Company has erected a derrick for William Martens 1, 1½ miles northwest of Tomball in the 250-acre Jeurgens tract in the Joseph House Survey. Weatherall Oil Company has derrick material on the ground for Cora V. Peden 1, 15,000 feet east of the recent abandonment drilled by Mills Bennett and in the northwest corner of the John Brock Survey.

Several New Wildcats in Louisiana Gulf Coast Area

Houston.—Progress in Louisiana Gulf Coast wildcats continued quiet during the week so far as showings of oil or gas were concerned, but there were announced a few new projects that will be closely watched for several months.

Southern Sulphur Company has begun preliminary work on three tests, all of which will involve maritime drilling practice. In the Bay Marchand district of La Fourche Parish, where Gulf Refining Company attempted to develop production in 1930, Southern Sulphur will drill State Bay Marchand 1. The well will call for 50-foot piling, being located in water about 20 feet deep and further offshore into the Gulf of Mexico than the Gulf wildcat.

Two other maritime wildcats planned by this organization, and on which preliminary construction for derrick foundations has started, are in St. Bernard Parish. State Lake Lery 1 will be drilled in the Olevier district in Section 28-14s-14e. State Lake Borne 1 will be drilled near Shell Beach in Township 13s-R15e.

Anticipated developments at Darrow and Gueydan have been delayed. At Darrow, Rio Bravo Oil Company's Community 2 appears to be clogged up in some manner or other. Plug was drilled from the casing set at 4748 feet to test nine feet of sand at 4756 feet, but the fluid only rose at the rate of about 200 feet an hour. The well is being washed. Gumble Lumber Company 1, Rio Bravo's other test at Darrow is drilling near 5300 feet.

At Gueydan, Vermilion Parish, Pure Oil Company is reaming about 300 feet off bottom in Mulvey Irrigation Company 2 after having picked up an oil sand at 4816-23 feet. Preparations to make a drill stem test were being made when part of the hole was lost. Mulvey Irrigation Company 3 is drilling below 2700 feet.

While Pure Oil Company's Yount-Lee 11 is in Sweet Lake field, it is regarded as semi-wildcat inasmuch as intention to go to 10,000 feet if necessary for production has been expressed.

At White Castle, Shell Petroleum Corporation's Wilbert 6 stands temporarily abandoned in salt at 6170 feet, while at Choctaw, another Iberville Parish dome, Standard Oil Company of Louisiana's Gay 3 is drilling below 5000 feet.

The Texas Company's State Garden Island Bay 7 at Garden Island Bay, Palquemines Parish, is drilling in salt below 2722 feet. Texas Gulf Sulphur Company will drill a test at Lake Hermitage, also in Plaquemines Parish, location for La Fourche Levee Board District 1 having been announced in Section 12-18s-25e.

Coastal Louisiana Results Include 2160-Barrel Well

Houston.—Five completions, including a 2160-barrel well in Port Barre, were recorded in Louisiana Gulf Coast last week. One other productive completion was a 50-barrel well in East Hackberry field.

Tabulation of the completions follows:

Company, Well and Location	Init. Prod. Bbls.	Depth
Jennings—		
Olympic Oil Co., Luckett 1	*	2097
East Hackberry—		
Calcasieu Oil Co., Watkins 20	50	3857
Watkins 40	*	2926
Jefferson Davis Parish (Roanoke)—		
Humble Oil & Ref. Co., Devilbiss 1	*	5121
Port Barre—		
The Texas Co., Botney Bay 14	2160	3237

*Failure. †Junked. ¶Million cu. ft. gas.

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Buyers Continue Panhandle Proration When State Quits

Pampa, Texas.—Suspension of all restrictions on oil production in the Texas Panhandle, which is officially rated at 148,978 barrels daily potential was authorized effective March 16 by the Texas Railroad Commission to continue for about three weeks. Inability to counteract the repeated injunctions issued by state and federal courts to Danciger Oil & Refining Company of Texas against proration enforcement of its 42 flowing and pumping wells in the Panhandle was the basis for the commission's action into throwing proration temporarily into discard.

The authorized wide open production will not be accessible to all operators, owing to the fact that the majority of the major purchasers have ruled that they will not increase their purchases of outside oil, or produce their own properties unrestricted, except in equalizing drainage by offsets. This stand precludes any possibility of the district going on an open flow basis, although a substantial hike in oil production is assured.

Withdrawal of the commission's restrictions was decided upon March 15, and as an explanation for its act stated "since the federal court has seen fit to open up some 42 wells of Danciger Oil & Refining Company in the Panhandle, and since the mere granting of the right to offsetting wells to run open would not go far enough to be fair to all operators and royalty owners in that field. The offset to the offset would be hurt, therefore the entire field is permitted to open up for the production of oil for three weeks, which is the length of time granted Danciger Oil & Refining Company to run open by the court."

Danciger Stays Open

Danciger Oil & Refining Company enjoyed immunity from all proration in the Panhandle from September 25, 1930, to February 13, 1933, or during the period that a test case was pending in state courts. The Texas Supreme Court declared the case moot on the latter date. The court battle was promptly renewed when the commission then sought to make the company comply with proration. The company was enjoined by Federal Judge Jas. C. Wilson at Fort Worth, effective March 7, from over-producing at the request of the state. Continuing its attack, Danciger Oil & Refining Company was given a hearing before a three-judge federal court at Dallas March 11, seeking an interlocutory injunction against the commission. The court withheld judgment, and will probably not make known its decision until some three weeks, but did authorize the plaintiff to resume open flow production, upon the posting of a $2500 bond, until the pending court decision is released.

It is quite apparent that this action upon the part of Dallas court did not set well with the members of the commission, and that the latter may have in mind checking the responsibility for a break down of proration in one of the major oil districts of the state back to the federal judges.

Although allowable production in the Panhandle was 43,000 barrels daily, the actual output last week was estimated at 44,550 barrels daily from approxi-

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■

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UTILITIES COMPANY

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mately 1852 pumping and flowing wells. The commission has always permitted owners of direct offset wells to those of Danciger Oil & Refining Company to enjoy the same privileges, and it so happens that major predominate as owners of said exceptions to prorations. The two classes of wells have ursurped a large percentage of the limited market for Panhandle crude, and other operators have consequently suffered through having lower allowables.

Before the elapse of the first day of production freedom there were positive signs that actually the district would not go on a wide open basis. Such purchasers as Humble Oil & Refining Company, The Texas Company and Continental Oil Company were quick to announce that their takings of outside oil would not be increased, and that their own properties would continue on old production schedules, except where offsets opened up.

Total Flush of Six North Texas Wells Is 85 Barrels

Wichita Falls, Texas.—Continuing to reflect the unfavorable influence the low crude prices are having on development work, the North Texas district yielded only 14 completions during the past week. Including in this group were eight dry holes and six oil producers having an aggregate of 85 barrels of new production.

Completions for the week follow:

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County—		
Morris & Dunn, E. T. Schroeder 1	*	1021
W. R. Stipe et al, Prideaux 1	*	1004
Wichita Production Co., Abercrombie 1	5	1188
Jack County—		
Tom B. Owens & Greenwood, Stewart 1	*	705
Root Drl. Co., Coleman-Leach 1	10	530
Wichita County—		
Geo. W. Cooper et al, R. A. Neal 4-A	*	1783
Geo. J. Proctor et al, Honaker 12	10	1340
Young County—		
Cable Oil Co., L. A. Snider 28	*	715
J. N. Wilson et al, Senkel 1.	*	550
Panhandle Ref. Co., M. B. Cook 1	40	2957
Hawkins & Gilmore, Geo. Garrett 1	*	598
Louis Mollenkopf et al, Jeffrey 1, Sec. 52	15	883
Worth Oil Co., G. Garrett 5-C	5	515
G. Garrett 6-C	*	543

*Failure. †Junked. ¶Million cu. ft. gas.

Humble Joins Noodle Creek Boycott Against Itself

Breckenridge, Texas. — Unanimous support is reported to have been given the movement initiated by operators in the Noodle Creek, field, Jones County, beginning March 11 to suspend oil production as a protest measure against the enforcement of a flat posted price of 30 cents per barrel for this high grivity grade of oil by Humble Oil & Refining Company. The latter is the only major purchaser in the field, and is also a producer, but joined the shutdown movement when it became apparent that the majority would act.

West Texas Completes Five Producing Wells

San Angelo, Texas.—The West Texas district contributed seven completions within the past week, including two failures and five oil producers with a combined initial yield of 445 barrels daily.

The abandoned tests included F. H. E. Oil Company's K. Stoker 1, located in the Emerald-Boren pool, Garza County, and it failed to develop any trace of oil in the lime horizon after drilling to 3006 feet. In northern Loving County, O. L. Scherer-Lewis & Slagel's W. D. Johnson 1, section 6, Block 56, T. & P. Ry. Survey, Tsp. 1, was abandoned in Delaware lime horizon, carrying salt water, at 3299 feet. It is a short distance northeast of a small wildcat producer.

Completions for the week follow:

Company, Well and Location	Init. Prod. Bbls.	Depth
Concho County—		
Mintex Oil Co., Sam Waring 1-A	5	2586
Ector County—		
Landreth Prod. Corp., O. B. Holt 1	110	4627
Garza County—		
F.H.E. Oil Co., K. Stoker 1..	*	3006
Loving County—		
O. L. Scherer-Lewis & Slagel, W. D. Johnson 1	*	3299
Ward County—		
Atlantic Oil Prod. Co., Jim Camp-Black 1	40	2884
Joe C. Maxwell et al, F. G. Smith-Pure 1	40	2800
Sturn-Nolen Drl. Co. et al, R. H. Gill-Jones 4	250	2591

*Failure. †Junked. ¶Million cu. ft. gas.

Mile Extension Indicated By Hutchinson County Well

Pampa, Texas.—Completions in the Texas Panhandle district last week included two oil wells and one dry gasser, with three counties contributing.

In southern Hutchinson County, J. C. Alexander et al's E. Cockrell 1, NEc S½ Section 3, T. C. Ry. Survey, Block M-21, promises to extend production about one mile, having swabbed 50 barrels oil from lime at 2925-3029 feet. It has a surface elevation of 3080 feet.

Completions for the week follow:

Company, Well and Location	Init. Prod. Bbls.	Depth
Collingsworth County—		
A. T. Kates et al, R. G. Hickman 1	*	3122
Gray County—		
The Texas Co., A. E. Gethings 1	115	2905
Hutchinson County—		
Huber Pet. Co., F. P. Works-Dunnaway 1	¶24	2605
Wheeler County—		
C. A. Stuckey et al, J. P. Coons-Magnolia 1	100	2324

*Failure. †Junked. ¶Million cu. ft. gas.

West Central Texas Gets Three Shallow Producers

Ranger, Texas.—An aggregate of 16 completions were reported by the West Central Texas district, including nine dry holes and four gassers with a combined initial yield of 4,250,000 cubic feet daily. The three shallow oil wells were likewise small in size, accounting for a total of 30 barrels of new production.

Completions for the week follow:

Company, Well and Location	Init. Prod. Bbls.	Depth
Brown County—		
Green & Ice, Hamp Byler 2-A.	10	1298
Geo. Nickle et al, W. M. Armstrong 1	*	1210
Callahan County—		
Gibson & Johnson, I. N. Jackson 1	*	943
H. B. House et al, E. L. Finley 1	¶¼	462
H. C. Sample et al, E. L. Finley 1	*	427
W. F. Snebold et al, J. H. Cunningham 1	*	723
W. V. Stephenson et al, J. C. Jones 1	*	510
Sweeney et al, Cook 1	*	805
R. Wadsworth et al, A. Hickman 1	*	465
Coleman County—		
Reeves & Riley, M. F. Rude 2.	15	880
Palo Pinto County—		
Brazos River O&G Co., F. E. Harrison 4	¶¼	1750
Palo Pinto O&G Co., Crocker-Andrews 1	¶3	3026
States Oil Corp., Allen-Ritchie 1	¶¾	762
Shackelford County—		
J. R. Hart et al, E. Schkede 2.	*	605
Jones et al, W. J. Dodson 4.	5	652
C. B. Welsh et al, Snyder 1.	*	610

*Failure. †Junked. ¶Million cu. ft. gas.

Home of The Oil Weekly, Houston . . . night view

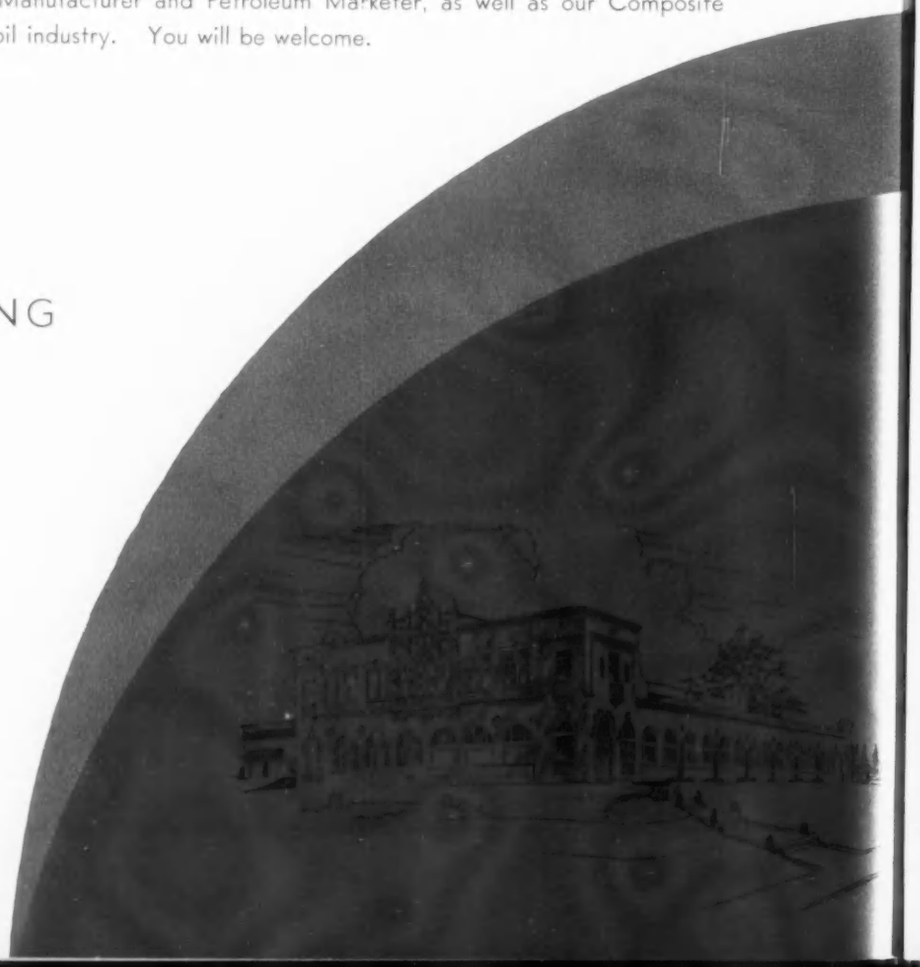
AN INVITATION

It has been the pleasure of The Oil Weekly, whose home at 3301 Buffalo Drive, Houston, is pictured on the opposite side of this page, to furnish both oil men and equipment men many times in the past with information on all sections of the oil world. Statistics and field operation data have been supplied inquiring oil men, and market data has been given equipment men.

This is a cordial invitation to all engaged in the oil and oil industry equipment business to take advantage of the facilities we have in our home office. Within the past few weeks we have been pleased to have as visitors, heads and other executives of several large companies who have come to us, seeking information particularly on the Gulf Coast. It will be our pleasure if the number increases.

Our home is on Buffalo Drive—two miles from the heart of Houston. In the building pictured are located the executive, chief editorial, circulation and advertising and printing departments of all of our oil publications—The Oil Weekly, The Refiner & Natural Gasoline Manufacturer and Petroleum Marketer, as well as our Composite Catalogs for the oil industry. You will be welcome.

GULF PUBLISHING
COMPANY



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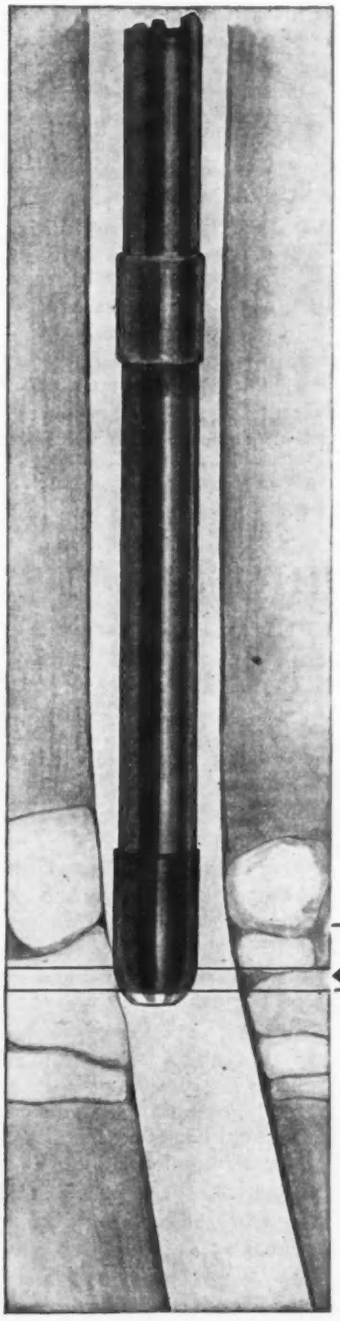

CONCRETE without reinforcement is brittle and easily broken by contact with obstructions. The new HERCULEAN Guide overcomes this weakness which has caused trouble in the use of *ordinary* Concrete Guides, by putting the major portion of the guiding function on the steel shoe itself.

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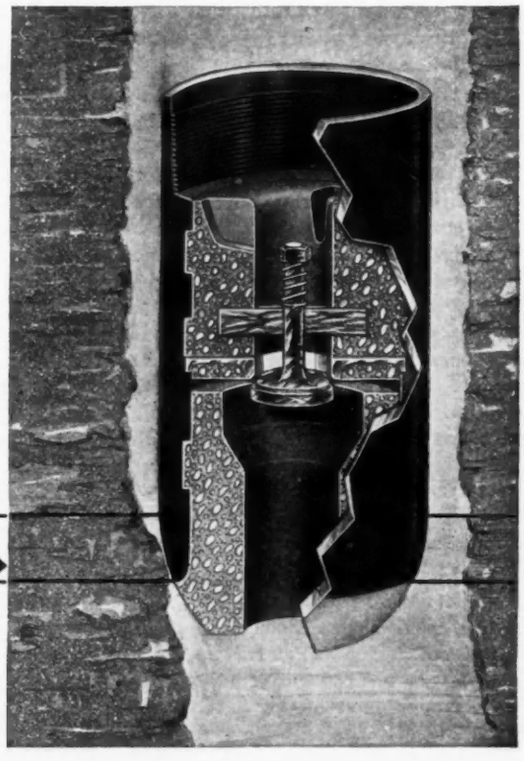

This new Herculean Guide is furnished in sizes larger than 7" on Float Shoes and Guide Shoes.

LARKIN PACKER COMPANY

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Officials Try to Stave Off Proration Collapse

Kilgore, Texas.—A contrast unparalleled in the history of the oil business prevailed in Texas toward the end of the week. Senior executives of nearly all the major purchasing companies operating directly or through subsidiaries east of the Rockies were climaxing a week of effort waged at Fort Worth and the state capital at Austin trying to stave off what appears now to be an inevitable temporary collapse of proration enforcement and a corresponding drop in prices in the East Texas field. On the other hand a deeply entrenched group of independent companies and operators engaged in producing, buying, transportating and refining crude from the East Texas field were working at top speed in expediting the withdrawal and movement of illegally produced oil, with little, if any, interference from the enforcement officers of the railroad commission.

Business is unquestionably booming with the violators. Production has been stepped up to approximately 600,000 barrels daily, including legally produced oil, while tank car shipments of crude have soared to a new seasonal peak of nearly 600 cars daily. Price concessions on crude quotations have opened up new avenues of outlet. The expansion of field gathering lines by independent producers, refiners and oil marketers almost rivals the former wide open production days in volume, with night shifts at work in some instances. New refineries are included in the spree of expansion, thus assuring in excess of 50 separate plants to be located within and adjacent to the field.

While this group is at work at a feverish pace to get set to continue to reap a rich harvest through their commandered adventage over producers, purchasers and refiners remaining loyal to proration laws of the state, a rather slow but determined effort to thwart their plans for a continued advantage has began shaping itself at the state capital.

In spite of the gloomy outlook appearing on the horizon for companies and individuals favoring proration, they have refused to concede defeat, and now find that the leading bankers of the state are rallying to their cause in fear of almost complete destruction of values on "oil paper" backing loans. Then the members of the legislature are becoming cognizant of the fact that one of the largest sources of tax revenue for the state has been thrown in jeopardy. This law making body sought a conference with the major company officials along with a representative group of independent companies and operators during the past week, and learned that corrective measures are no longer within the power of the leaders of the industry, but entirely dependent upon the law enacting and enforcing bodies of the state.

Heads of major companies that heretofore have been generally accused of harboring a secretive desire to have proration lifted in the flush fields in order that they may accumulate a vast volume of high grade crude at five and ten cents per barrel and hoard same for the return of better prices that must follow in the wake of the depletion of flush fields are actively working to head off the threatened disruption of proration.

It is becoming more apparent to the most casual observer that the majors are going to refrain from piling up big stocks of crude again to be carried over a period of years for the reason that the visible supply in place is too great to repeat costly policies carried out during the post-war days.

An analysis of the points of destination of illicit crude departing from the East Texas field by tank cars and pipe lines indicates that the majors are beginning to fulfill their recent promises to stay shy of this class of crude. Loyal prorationists are not fully satisfied that such a promise boycott is in force, but stern measures have been taken lately by majors towards correcting the evil within their ranks.

To effset the shrinkage sustained in their market outlet through withdrawal of support by major companies those dealing in illicit oil have reached out and lined up foreign markets, particularly France, through liberal price concessions. This development is threatening to disrupt restricted production agreements now prevailing in some foreign fields.

Commissioner Thompson Asks Help, Not Criticism

Austin, Texas.—In a statement issued to the press, Railroad Commissioner Earnest O. Thompson today, called on the oil industry of Texas to offer some solution to the problem of proration control to replace their constant criticism of the commission's rule.

He protested against the attitude of the opposing factions which constantly criticize the orders and methods of enforcement employed by the commission, but pointed out that they do not offer any plan to be substituted.

He declared that all of them are interested in a high price for oil and complain when the commission, which has no control over price, cannot get it for them.

He charged that "the oil industry does not want to set its own house in order. Violations continue, just as there are violations of other laws, but in this instance the citizens are raising a cry to abolish the enforcement body.

"The fact that the commission has enjoined many violators has been ignored, but when the commission fails to convict one of the violators, violent protests are received from every side.

"The commission has no power other than that delegated by the statutes, and cannot over-ride the legislature and courts. It cannot compel complete cooperation throughout the oil industry. However, perhaps the critics of the commission can offer some plan that will enable it to do these things.

"What is needed, and all that is needed, is the passage of the five simple penal statutes which will provide that violators can be arrested on the spot and promptly prosecuted in local courts where the offense occurs. Aroused public opinion will attend to that.

"There are two tendencies to this constant agitation:

"1. To completely break down proration by the railroad commission or any other commission;

"2. To pave the way for federal control.

"No thinking Texan would tolerate federal control. Our police power still belongs to Texas."

30 East Texas Completions; Lease Splitting Slackens

Tyler, Texas.—The East Texas oil field yielded 30 completions during the past week, and four of the new wells were situated on small leases receiving their first tests. The former practice of chopping up tracts to create more separate leases and strong grounds for the drilling of more wells is now much less prevalent.

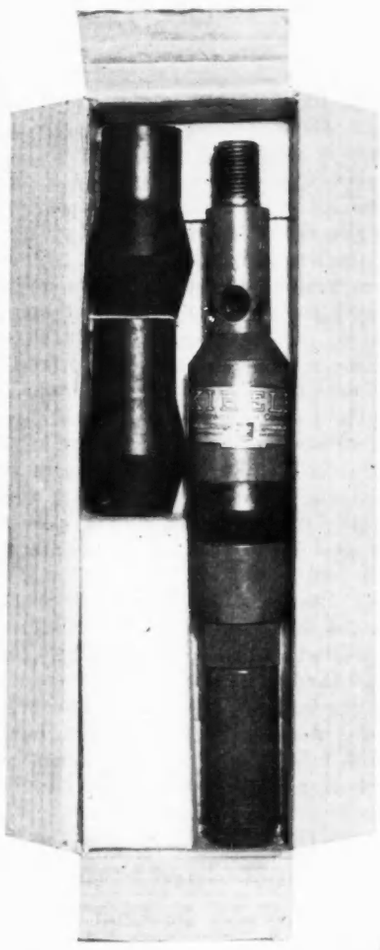
Included in this new list of completions was one pumper drilled by Stedham & Thrasher (formerly J. B. Crockett) on the B. D. Russell 1½-acre tract, Kilgore townsite area, rated at 100 barrels oil daily from sand at 3525-40 feet. In the north end of the field, A. F. Waggoner & Barney McConnell's Jim Williams 4, located on 100-acre tract, McKinney-Williams survey, swabbed 90 per cent water after taking in sand at 3618-3630 feet, and has plugged back to 3620 feet, or 3303 feet below sea level.

Completions for the week follow:

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Devonian Oil Co.-Barnsdall Oil Co., Alford (99-ac) 8	7000	3781
Gulf Prod. Co., G. G. Turner (312-ac) 20	9400	3703
Humble O&R Co., Jas. Fuller (115-ac) 8	8500	3688
Ida Holt (99-ac) 8-C	9000	3788
Chas. L. McMahon et al, Joe Lee (83-ac) 4	7200	3683
Sun Oil Co., R. J. Hendon (100-ac) 6	1000	3566
The Texas Co., J. D. Stone (50-ac) 5	7000	3694
Kilgore Area—		
Daniels & Scott, Irion 1	8600	3826
Gulf Prod. Co., O. R. Baton (56-ac) 3	6500	3633
C. E. Christian (277-ac) 15-C	9500	3675
J. T. Sexton (165-ac) 8	7200	3672
Humble O&R Co., L. D. Crim 67	9000	3694
S. S. Laird (230-ac) 21-A	6800	3681
Henry Sexton (264-ac) 14-B	7500	3679
Henry Sexton (264-ac) 18-B	8000	3768
Madalyn Oil Co., J. W. Rosser (1-ac) 1	8500	3743
Olsen Bros. Inc., & Johnson, J. S. Powers (133-ac) 9	8200	3782
Southern Oil Ref. Co., I&GN Ry. 5	5500	3712
Stedham & Thrasher (was J. B. Crockett), B. D. Russell (1½-ac) 1	100	3540
Longview Area—		
Byrd & Frost, Inc., J. J. Reppond (50-ac) 5	8500	3707
Darby Pet. Co., W. H. Richey (43-ac) 6	10,500	3554
Gulf Prod. Co., Tom Clemmons (55-ac) 5	8000	3662
Humble O&R Co., W. R. Hughes (185-ac) 20	9600	3657
I. D. Smith (245-ac) 19	3000	3621
C. A. Lester & Duffield, L. Graves-Shell (80-ac) 4	9500	3697
Jack T. Life et al, B. Moore (2-ac) 1	9000	3580
Magnolia Pet. Co., W. R. Nicholson (50-ac) 4	8000	3680
Sun Oil Co., Mose Thomas (72-ac) 7	11,000	3528
The Texas Co., T. W. Lee (210-ac) 15	11,000	3561
J. Z. Werby-Refugio Oil Corp., Read-Shell (196-ac) 3	8000	3634

*Failure. †Junked. ¶Million cu. ft. gas.

SAY MR. PUSHER...



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Flood of Claims for Back Allowable Being Filed

Kilgore, Texas.—A flood of claims began reaching the field headquarters of the railroad commission's enforcement bureau late last week whereby operators in the East Texas field are seeking permission to run accumulated back allowables. The ban on back allowable oil was lifted by the commission March 15 as a sequal to a court ruling obtained by Frank A. Bates and T. I. Underwood at Tyler, March 3.

Bates & Underwood were granted permission by Federal Judge Randolph Bryant to produce their four wells on the M. T. Cole 40-acre lease, E. M. Bramlett Survey, Gregg County, at rate of 500 barrels daily each, alleging that the property was behind 250,000 barrels in production. Claim was set forth that adjoining leases produced 1,000,000 barrels between May and September, 1931, while the plaintiffs' lease was deprived of a pipe line connection. Field records show that only one well was on the Cole 40-acre lease during the above period, and it was listed as making water. Judge Bryant refused to set aside his order when a special plea was made by the state at Beaumont, March 10.

The precedent established by the Bates & Underwood case has since induced scores of other operators in the field to collect proof of excessive oil drainage by neighbors, and many law firms were at work preparing petitions to be filed with Judge Bryant when the commission made its ruling last week.

Due to the uncertainty of the crude market, it is quite likely that nearly all back allowable produced under the above plan by operators will be refused by companies paying the posted price, thereby throwing another large volume of legal oil upon the spot market at distress prices, which now range from 15 to 30 cents at the well.

See Back Allowable Order As Weakening Proration

Austin, Texas.—East Texas producers will be permitted to make up "back allowable" under an order issued last week by the Texas Railroad Commission. Operators who had unconnected wells, did not run on Sunday or for any reason did not move all the oil allowed, have been invited to make application to the Kilgore office of the commission for a permit to increase current runs to make up the deficiencies. These applications will be checked and referred to Austin where permits will be issued when found justifiable. Commissioner E. O. Thompson expressed the belief that this would not mean an immediate increase in runs from the field, for the reason that issuing permits will be slow and result in the oil being marketed in small lots.

It is understood here that the order may affect the 150,000 barrels of oil run by Sinclair Prairie Oil Company early this month; that this will class as "Sunday oil."

At the same time the commission issued its order opening wells in the Panhandle pending further litigation with Danciger Oil & Refining Company, which has lead to comment among representatives of the oil industry gathered at Austin in connection with hearings, etc., that such tactics on the part of the commission further endangers the proration structure.

Seek Contracts on Basis That Proration Is Ending

Tyler, Texas.—Assuming that proration restrictions are destined to be permanently discarded in the East Texas field, Danciger Oil & Refining Company is seeking three-year crude contracts of operators to supply a minimum of 200 barrels oil daily per well to the field refinery of the Petroleum Refractionating Corporation. Operators availing themselves of an opportunity to line up a permanent market outlet for their wells would sell the oil on a profit sharing basis, according to the offers now being tendered.

The plan provides for a fixed charge of 10 cents per barrel to retire investment in plant and pipe line gathering systems, and it is estimated that in operating the plant on a cost basis the expense involved in gathering, processing and selling products will not exceed 14 cents per barrel. It is estimated that the maximum over-all expense will not be in excess of 24 cents per barrel. The refinery is rated at 10,000 barrels daily, and is one of the most modern in the district, having been built in 1931, but has never been operated other than the preliminary tests made upon completion.

Seek to Reduce State River Bed Royalty in East Texas

Austin, Texas.—A bill introduced in the Senate during the past week which will permit the State Board of Mineral Development to revise state contracts on leases in the Sabine River bed in East Texas has been the cause of much argument.

Operators who hold these leases contend that they cannot pay out their contracts if they obey the present proration orders of the railroad commission.

The bill would reduce the state's royalty, and provide that the operators would abide by proration orders.

Most of the contracts call for 3/8 royalty plus $5000 per well to be paid out of an additional 1/16 of the oil.

Opponents of the measure declare that this is merely a scheme to prevent the state from collecting a just debt, and that such a revision would not be considered if the contract had been made between private parties.

Court Orders Pure to Move East Texas Refining Oil

Fort Worth, Texas.—Pure-Van Pipe Line Company will accept tender of 250,000 barrels of crude made by East Texas Refining Company for movement to the coast, as result of court order issued in district court here Friday. East Texas Refining Company recently was granted an injunction restraining all persons and agencies from interfering with its operations. Tender of the oil was made through Liberty Pipe Line Company and refused by Pure-Van Pipe Line Company. The order was issued by Judge Marvin H. Brown. The oil is intended for export.

Rush County Wildcat Test Justifies Setting Casing

Tyler, Texas.—The wildcat test of Malone-Cararas and Edwards on the J. S. Williams 60-acre lease, Jesse Crawford Survey, Rusk County, yielded sufficient oil and gas showings in the Woodbine sand horizon at 3630-3652 feet to justify landing a string of casing.

It is located about 1½ miles due east of the southernmost gasser in the East Texas field, and, because of this isolation, would probably be treated as a separate field in the event commercial production results, thereby escaping proration of oil yield, if any, until the 10,000-barrel level is reached.

Williams 1 drilled through the Woodbine sand to a depth of 3700 feet, or 3300 feet below sea level. Although some evidence of oil was reported in the lower section of the sand, it is considered most likely that the test will be a gasser should it produce.

Among the new locations made on wildcat blocks in East Texas district is that of Bunn, Johnson and Russell, Oklahoma operators, in eastern Hunt County on a large block of leases. Materials are reported to be en route for the drilling of a Woodbine sand test on the Smith-Berry tract, Wm. Glass Survey, located a short distance east of Campbell.

Humble Plugs Back to Get O'Connor Producer

San Antonio, Texas.—Humble Oil & Refining Company finally completed an oil producer in its O'Connor 3, F. Rios survey, Refugio County. The well was drilled to 6860 feet, plugged back to 2939 feet, and drilled ahead to 3138 feet, its present depth. The well flowed 105 barrels 21 gravity oil on a one-eighth-inch choke in 24 hours, showing a tubing pressure of 200 pounds and about one per cent salt water and b.s.

This well is located 13,575 feet from the south line and 3412 feet from the east line of the 5454-acre ranch, and 3930 feet southeast of No. 1. It is on the extreme southwest edge of the McFadden-O'Connor strike through Refugio and Victoria Counties.

The test was completed November 17, 1932, from 3136-48 feet, where it flowed several hundred barrels of oil daily, but went to salt water. It was then deepened, showing several oil and gas sands.

Several important sands have been uncovered by the Humble to slightly below 4000 feet in this immediate area, so it might be expected that the company will carry on further exploitation work.

Duval County Extension And New Sand Proven

San Antonio, Texas.—Extensions to two fields, and establishment of a new producing zone in the third resulted from Duval County activity during the week.

In the northern portion of the Sarnosa field, Atravasada Oil Company has the sand in its Hernandez 1, section 574, and is waiting on cement. Its total depth is 2488 feet. Magnolia Petroleum Company's D. Ruiz 1, Section 127, 1070 feet northeast of nearest production, is completing at 2390-2432 feet. When the swab was run, the pressure blew it from the hole. The well was then killed and tubing is being run. It looks like one of the best producers in the field, and opens additional area for development.

The Humble Oil & Refining Company apparently provided a one-half mile northeast extension to the North Government Wells field by its C. W. Hahl 3, which has an excellent oil sand at 2296-2303 feet. Casing has been set and it will be drilled in the first of the week.

It is located 2310 feet from the south and 1650 feet from the east lines of the 320-acre tract, being the east one-half of Section 360. The well is more than a mile southeast of the W. B. Stewart prospects and half that distance south of the Magnolia's wildcat, just starting.

W. B. Stewart's Duval Ranch 1, Section 362, mile north of this production, is drilling at 2010 feet after topping the Cole sand at 1583 feet. The No. 2 well, further west, topped the Cole sand at 1566 feet, drilled to 1576 feet and is being completed as a gasser.

Over on the Peters ranch, six or seven miles southwest of the Sarnosa field, Shasta Oil Company's W. R. Peters 1-B, is setting casing after testing 700 pounds gas pressure from 2690-99 feet in the Mirando sand. The well originally showed for a gasser in the Government Wells horizon from 2505-32 feet, where it tested 450 pounds, as compared with 2431-51 feet in the Peters 1, 1530 feet due west, which is a large gasser in this horizon. The 1-B is located in the southwest quarter of Section 176.

Quarter Mile Extension For Laurel Field Likely

San Antonio, Texas.—An extension of more than one-fourth mile in a southwesterly direction in the Laurel field, Webb County, is expected following the showing of Wise and Jackson's Garcia-Villareal 1, northeast corner of the southwest quarter of section 1100. The well topped the sand at 2198 feet and set casing without making drill stem test.

It is east of Parr et al's gasser and southwest of the oil production. Its successful completion will throw considerable new territory into the possible producing zone.

South Texas Oil Company likely defined the east edge of the field with its Laurel 6, southwest corner of Block 13, Section 270, which is making 30 barrels daily from 2254 feet.

Magnolia Petroleum Company's south offset to Garcia-Villareal 1 (2) is a 425-barrel well at 2213 feet. It is the Garcia-Villareal 3, most southerly producer in the field. Offsetting this well to the west, Dyck Oil Company is bringing in its Garcia-Villareal 3, which has the sand at 2193-2204 feet. Both are in Section 1100.

San Patricio Deep Test Continues Taking Cores

San Antonio, Texas.—San Patricio County's deep test continues to core sands. The last was at 6300-31 feet, where it showed salt water and a little oil. The well is now drilling at 6426 feet.

It is the Saxet Oil Company's Rachal 19, in the J. N. Seguin survey, 1236 feet northwest of No. 17, which is classed as the deep discovery well of the White Point field.

Sixteen Completions In South Texas Fields

San Antonio, Texas.—Nine dry holes, one gasser, five oil wells and a cratered hole were included in the week's completions in South Texas. They follow:

Company, Well and Location	Init. Prod. Bbls.	Depth
Bastrop County—		
Bastrop Oil Co., Frietag 1, P. Conley sur.	*	2234
Bexar County—		
C. J. Albertson, Mr. C. Hoch 1, Baerera sur	¶¼	528
Chiquita Oil Co., A. C. Hunter 4, J. Martinez sur	*	2138
R. V. Hill, M. & Boeck 1, Shepherd sur No. 314	*	406
J. M. Russell, B. Brotze 1, Cordenas sur	*	285
Duval County—		
Magnolia Pet. Co., C. W. Hahl 5-A, Sec. 45	360	2330
Texas Co., D. J. Freer 5, Sec. 45	480	2261
Gonzales County—		
E. Haenel, Jr., James 1-A, Williams sur	*	2473
Kendall County—		
Verland Trust, W. Werner 2, Sec. 782	*	970
McMullen County—		
Gant & Teas, Hagist Ranch 1, Sec. 24, block 5	*	2650
C. B. Loften et al, R. H. Brown 2, No. 54, Duncan sur	*	950
Refugio County—		
Gulf Production Co., O'Conner 2, CEPI&M Survey	*	6860
Humble Oil & Ref. Co., O'Conner 3, F. Rios sur.	105	3138
Victoria County—		
The Texas Company, A. M. McFadden 6, A. J. Gray sur.	cratered	3047
Webb County—		
Magnolia Petroleum Co., J. M. Garcia 3, Sec. 1100	425	2213
South Texas Oil Co., Laurel 6, Blk. 13, Sec. 270	30	2254

*Failure. †Junked. ¶Million cu. ft. gas.

Saxet Deep Sand Goal Of Drilling Campaign

San Antonio, Texas.—The 4800-foot horizon is rapidly becoming the goal of operators in the Saxet field, Nueces County. Several more tests showed for producers in this horizon during the past week, and are now in the process of completion.

Gulf Port Oil Company's Ran Morgan 1, Section 403, is coring for the sand at 4846 feet, while A. F. Holliday's F. J. Smith is preparing to drill in after coring the sand from 4866-74 feet, and showing for a good producer on a drill stem test.

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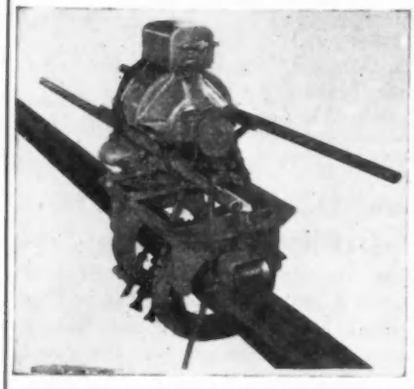

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Bastrop and Duval Hold South Texas Spotlight

San Antonio, Texas.—Bastrop County's serpentine fields and spotted wildcats in Duval County held the most interest in South Texas during the week. Magnolia's Premount prospect in Jim Wells County, several outpost wells in the Saxet field, and San Patricio County's deep test also were in the limelight.

Jacob, Buzzini & Pickett, Inc.'s A. Schroeder, only Atascosa County operation, is to resume drilling below the surface casing. It is in the F. Anthony survey.

In Bastrop County, J. E. Emanuels' H. Klemm 1, R. S. Teal survey, near McDade, is preparing to resume drilling around 250 feet. Gant & Wegener & Teas' Mikulec 1, William Barton survey, completed a fishing job at 1695 feet, after shooting off drill stem and is drilling at 6403 feet. It topped the Austin chalk at 6355 feet. Humble Oil & Refining Company located its Peter Goertz and Pierce Wolfenberger wells in the Hilbig area. It is preparing to drill in two more wells in this district. Beck 1, A. Mays survey, topped the serpentine at 2497 and drilled to 2513 feet; A. A. Friske 1, Yenberger survey, topped the serpentine at 2349 feet and drilled to 2455 feet. Its Betty White 1, C. S. Smith survey, is drilling at 3455 feet in Georgetown. Marts and Beavens are rigging up Reyes 1, Addison Lytton survey, and preparing to complete C. L. Riddle 1, Gray and Leach survey. It had dry serpentine from 2199 to 2288 feet and Dale line to total depth of 2298 feet; and showed 150 feet of oil and mud and some gas on a drill stem test from 2173 to total depth.

Aztec Oil & Refining Company's J. M. Taylor 1, Section 13, Uranga survey, Bee County, is drilling below 2800 feet. V. I. Grisham's J. M. Rapp 1-B, Section 12, C. Miller survey, has built derrick. The Texas Company is swabbing D. W. Cox 2, Section 2, in the Pettus sand at 4098 feet. It topped the sand at 4081 feet, and set casing at 4087 feet.

In Bexar County, C. J. Albertson is moving on his J. C. Vogt 1, S. Jett survey. R. S. Bolling is drilling around 500 feet in Appelt 1, M. Urriegas survey, E. R. Byrd is drilling at a shallow depth in W. H. Russell 1, survey No. 6. Chiquita Oil Company's A. C. Hunter 5, Section 144, J. Martinez survey, is drilling at 1420 feet. Eckert & Son are starting their A. C. Brehm 4, A. C. Boquar survey. M. L. Howard is still attempting to complete J. M. Watson 1, No. 16, B. Martinez survey, at 2505 feet. Motes-Campbell Company is drilling at 1115 feet in its R. T. Pruitt 1, McCullough survey, and is clearing location for its R. T. Pruitt 1, F. Rolen survey. D. C. Pegg is testing his E. Gembler 3, Section 4, Survey 51, at 700 feet. Earl S. Post is drilling Bilhartz 1, F. Roln survey No. 48, at 135 feet. C. W. Richards is coring for the sand in J. Halbardier 6, J. Perez Survey No. 6. J. Morgan Russell's B. Brotze 1, Cordenas survey, has a small showing at 285, and derrick has been skidded over for Brotze 2. Sun Rise Oil Company is testing at 765 feet in Robert J. Uecker 1, J. M. Martinez survey. M. E. Trussell is drilling below 60 feet in his Harring 1, Conti survey.

Adams and Lysles are coring Roberts 1 at 2185 feet. It is in the John Neill survey, Caldwell County. The well showed some saturation at 1993-2100 feet.

Duval County wildcats are showing for production. Atravasada Oil Company's Hernandez 1, Survey 574, has set casing in a sand at 2488 feet. Cole Petroleum Company is drilling deeper from 2268 feet in J. W. Kidd 1, Section 56. W. T. Daniels found oil in a sand at 2307-11 feet in F. J. Smith 1, Section 46, and is preparing to set casing. Hester Brothers are starting their Fee 1, Section 47. Humble Oil & Refining Company has set casing in C. W. Hahl 3, Section 360, which showed oil from 2296-2303 feet; C. W. Hahl 4, same section, is being located. Magnolia Petroleum Company is completing its D. Ruiz 1, Section 127, which has the sand at 2390-2432 feet. Navarro Oil Company set pipe after coring the sand from 2254-58 feet in its C. W. Hahl 3, Section 360. Reynosa Oil Company is moving onto its C. W. Hahl 5, Section 42. Shasta Oil Company's W. R. Peters 1-B, Section 176, has set casing above a sand at 2690-99 feet, where it shows for a big gasser. Stanley Smith's Manuel Oliverez 1, Section 80, is down 2622 feet, where it has shut down for orders. W. R. Stewart is drilling Duval Ranch 1, Section 362, at 2010 feet, and is preparing to bring in Duval Ranch 2, Section 362, in the Cole sand at 1566-76 feet.

Carl & Johnston's W. M. Doughty 1, No. 9, San Salvadore survey, is drilling at 507 feet. N. G. Martin's Garcia 1, Porcion 42, Reynosa survey, is rigging up. Both are in Hidalgo County.

Rio Oil Company is spudding in its E. L. Armstrong 1, Section 99, Jim Hogg County.

Crude Oil Royalty Company is resuming drilling on its W. D. Wade 1, B. B. Allen survey, Lot 2, Jim Wells County. Magnolia Petroleum Company's A. A. Seeligson 2, No. 218 V. Canales survey,

is running tubing at 3209-15 feet, where it is showing for a producer.

In Karnes County, W. R. Campbell's E. G. Gilbert 1, C. Martinez survey, is drilling around 1600 feet. Magnolia Petroleum Company has located its G. Porter 1, S. Morris survey.

W. E. Clark is preparing to drill Jeff Love 1, Section 1594, Kerr County.

Patton Brothers have a fishing job in C. A. Turner 1-B, D. Hudson survey, Lee County. Drill pipe was stuck at 3175 feet, and was shot off at 2300 feet, where a fishing job is underway.

In Live Oak County, Humble Oil & Refining Company's A. West 1, T. Hammond survey, showed 850 feet of salt water and a little gas in four minutes from 2808-29 feet. Jacob, Buzzini & Pickett's Withers 1, Farm 10, J. Dickinson subdivision, set surface casing. George R. Pinkley's Border National Bank 1, Stephen Hays survey, is drilling ahead after setting surface pipe.

In McMullen County, Greenwood and Clavert are shut down for repairs in Z. A. Booth 1, central portion Section 21, John Garner survey. It is down 1209 feet. Jaqua and Crow's E. R. Hagist 1, Section 467, R. W. Mills survey, tested mud and drilling fluid from 2199-2208 feet, and another test is being attempted. C. R. Pope, Inc., is rigging up E. L. Miles 1, Section 14, S. & M. survey. S. R. & C. Oil Company's LaChusa 1, Section 47, cored a dry sand from 1668-71 feet. Shumway et al is moving onto Shiner Ranch 2.

Nueces County has several interesting wells. Gibson Oil Company's Ran Morgan 2, R. Shaeffer survey, is drilling below 2000 feet. Gulf Port Oil Company's F. Bliss 1, Section 406, shut down for some time at 4059 feet due to heavy gas pressure, has resumed drilling and is below 4100 feet; R. Morgan 1, Section 403, is drilling at 4835 feet. A. F. Holliday's F. J. Smith 1, Block 35, H. B. Shepherd farm lots, is waiting on cement at a total depth of 4874 feet. F. J. Smith 2, same block, is preparing to resume drilling below surface casing at 517 feet. Houston Oil Company's E. McGregor 3, Section 311, is drilling at 4110 feet. Shasta Oil Company is waiting on cement after plugging to 3960 feet in F. Quiroz 1, Section 311. Shasta's Quiroz 2, same section, is still listed as a location. Texas Gulf Coast Oil Company's Clark-Morgan 1, Section 405, is reaming to test a sand at 4865 feet.

George E. Smith is starting his J. W. O'Brien 1, Winfield survey, Refugio County. United Production Company is drilling below 1500 feet in M. F. Lambert 1-A, Hews and Brown survey.

Saxet Oil Company's F. S. Rachel 19, J. N. Seguin survey, San Patricio County, is drilling at 6426 feet.

Bryan & Tharp's A. Guerra 1, Block 1, San Jose survey, Starr County, is drilling at 1250 feet. Goodwin and Yantis are preparing to deepen their M. J. Walker 1, Section 767, from 1000 feet. It is projected to 2500 feet; same operators have drilled Kelsey Bass 2 to 805 feet and are temporarily shut down, and their Seabury, George & Taylor 1, porcion 75, is down 1280 feet. Hooks & Weaver have drilled Kelsey Bass 14-2A, Section 6, Porcion 75-76-77, to 1126 feet.

Evans & Thompson are preparing to spud in P. Farris 1, J. M. Hammond survey No. 654, Uvalde County.

In Victoria County, Gulf Production Company et al's Keeran 3, M. DeLeon survey, drilled to 7465 feet, tested salt water, and has been plugged to a sand at 5698-5702 feet, where it showed considerable oil. Quintana Petroleum Company's S. W. McCormick 1, S. A. & M. G. survey No. A 314, is deepening from 6030 feet, after showing 1500 pounds dry gas pressure. Stonleigh Oil & Gas Company is prepared to spud its E. B. Terrell 1, R. Manchola survey No. 2.

Earl Calloway's A. E. Gates 1, Section 14, Webb County, is still listed as a derrick. Cole Petroleum Company's A. Villareal 1, Survey 1090, is drilling at 720 feet. Dyck Oil Company's Garcia-Villareal 3, Section 1100, has set casing on

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a sand at 2193-2204 feet. Seagraves and Salsbury are preparing to move on A. E. Gates 1, Section 66. South Texas Oil Company's B. Rosenburg 12, Section 271, Block 16, is coring around 2190 feet. Whisenant and Trenchard are spudding Duval County Ranch Company 2, Block 13, Section 101. Wise and Jackson topped a sand at 2198 feet in Garcia-Villareal 1, Section 1100, and has set casing.

Sexton Petroleum Company's Joe Gutzeit 1, Block 4, F. Flores Survey, has resumed drilling at 100 feet. It is in Wilson County.

In Zapata County, Garrett, Lefevre and Spice are drilling at 1250 feet in M. Garza 1, Block 53, Las Comitas grant. O. W. Killam is rigging up on A. M. Bruni 3, Blas Uribe tract, Ignacio subdivision of the J. V. Borrego grant. Dr. R. McCormick is drilling below 1000 feet in Bustamante 1, No. 32, Comitas grant. Sarah Pappas is starting a well on the Juan V. Cuellar, Jr., tract in Block 3, Survey 2, Pappas subdivision of Porcion 34. Stevens and Brown are starting J. M. Garcia 1, Section 434, Block 102.

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Serpentine Plugs Active In Bastrop Drilling

San Antonio, Texas.—Bastrop County's Serpentine plugs hold South Texas spotlight with several important wells showing for possible large producers.

In the Hilbig district, recently opened by the Humble Oil & Refining Company, that company is preparing to drill in A. A. Friske 1, S. W. Yenberger survey. It had the top of the Serpentine at 2349 feet and drilled to 2455 feet, where saturation was reported. The Beck 1, A. Mayes survey, topped the Serpentine at 2497 feet, drilled to 2513 feet, and is setting casing. Peter Goetz 1 and Pierce Wolfemberger 1 were the company's new location.

The Humble is drilling a new deep test to the north of the discovery well. It is Betty White 1, C. S. Smith survey, which is now drilling at 3455 feet in the Buda lime.

Southwest of this pool in the Ogden and Reed pool, Marts and Beavens apparently have a good well in C. L. Riddle 1, Gray and Leach survey, east of the present producer. The well showed dry Serpentine from 2190 to 2288 feet, then went into a sandy lime and Serpentine conglomerate, referred to as the Dale lime, to a total depth of 2298 feet. It showed 160 feet of oil and mud, 60 per cent oil, and some gas on a drill stem test. Casing was set and it is now being drilled in.

This company is attempting to uncover another Serpentine plug with its Reyes 1, Addison Lytton survey, north of this production, which is now rigging up.

Gulf Plugs Back to Test Keeran Field Extension

San Antonio, Texas.—Further expansion of the Keeran Field, Victoria County, is expected to result from the Gulf Production Company's Keeran 3, which is waiting on cement. The well drilled through several promising sands to 7465 feet, where it tested salt water. It then plugged to a sand at 5698-5702 feet, where it showed considerable oil on a drill stem test and has set casing to complete.

This well is located 1320 feet northwest of the company's Keeran 1 in the M. de Leon survey.

Of particular interest is that a new producing horizon is indicated. The discovery sand was logged from 5181-91 feet, where it made a huge gasser spraying gasoline. The second was at 5831-41, where a 500-barrel oil well was completed. The third opened late in February, was from 5493-5507 feet, where a 120,000,000 cubic foot gasser, spraying 240 barrels of gasoline was completed. Now, a test is being made at a different level.

Caldwell County Has Austin Chalk Well

San Antonio. — Adams and Lysles Roberts 1, John Neill survey, Caldwell County, is showing for some sort of producer in the Austin chalk. The well, located in the northern portion of the county, topped the chalk at 1964 feet, and is now coring at 2185 feet. It had soft breaks at 1993 feet to 2100 feet, where there was considerable saturation. It is likely that casing will be set to test.

State Department Issues 75 Permits in Texas

Austin, Texas.—Permits to drill new wells in Texas dropped to 75 during the week, a decrease of 18 from the 93 issued the week previous. Issuance of the permits this week brought the total for the year up to 1211, a 10 per cent increase over the total issued for a corresponding period of 1932.

In Archer County, Mrs. H. B. Wallace, Wichita Falls, was granted a permit to drill Fee 41 (167-ac), 300 feet south of No. 34, No. 1 S. P. Railway survey. C. E. Jones et al, Iowa Park, were granted a permit to drill A. D. Britton 1, (10-ac), 150 ft from north and east lines of Section 55, DCSL survey. Kisk Oil Company, Wichita Falls, was granted a permit to drill R. O. Prideaux 8, (113-ac), 300 feet west of No. 6, J. J. Hand survey. Magee, Stipe & Grisham, Wichita Falls, were granted a permit to drill Portwood 1, (40-ac), 150 feet from south and east lines of 1587 TE&L survey.

In Baylor County, Moran Company, Wichita Falls, was granted a permit to drill W. H. Portwood 1, (80-ac), 200

feet from north and west lines of SE¼ 3141 TE&L survey.

In Bastrop County, Eastland Oil Company, Fort Worth, was granted a permit to drill W. M. Riddle 1, (79-ac), 150 feet from east and 850 feet from south line of Wm. Leach survey.

In Bexar County, C. I. Albertson, Sinton, was granted a permit to drill J. G. Voght 1, (237-ac), 2100 feet from north and 240 feet from east line of Section 2, S. McColloch Survey No. 53.

In Brazoria County, National Minerals Corporation, Houston, was granted permit to drill Tolar-Dannenbaum 1, (400-ac), 500 feet from north and 1200 feet from west line of J. E. Groce survey.

In Burleson County, Berry & Hayes, Oklahoma City, Oklahoma, were granted permit to drill C. W. Young 1, (147-ac), 250 feet from southwest and 1089 feet from southeast line of Jno. Bird survey.

In Carson County, Texoma Natural Gas Company, Amarillo, was granted a permit to drill J. Gores 1S, (320-ac), 1328 feet from east and 1330 feet from south line of Section 42, Block 4, I&GN survey.

In Chambers County, Pure Oil Company, Houston, was granted a permit to drill W. F. Mayes 17, (519-ac), 400 feet northeast of No. 15, E. H. R. Wallis survey.

In Clay County, The Texas Company, Wichita Falls, was granted a permit to drill J. B. L. Hansard 1, (129-ac), 2933 feet from northwest and 650 feet from southwest line of Block 2, Thornberry survey.

In Duval County, Magnolia Petroleum Company, Dallas, was granted a permit to drill Hahl 2, 330 feet from north and east lines of northwest quarter Section 45, J. Poitevent survey.

In Fort Bend County, Cullen & West Production Company, Houston, was granted a permit to drill C. R. Whitmore A1, (60-ac), 231 feet from east and 315 feet from south line of S. Kennedy survey. Gulf Production Company, Houston, was granted permits to drill F. I. Booth A 4, (1107-ac), 300 feet south of center of north line of S. Kennedy survey; F. Gubbels 4, (100-ac) 371 feet from east and 1758 feet from south line of S. Kennedy survey; T. R. Booth 6, (452-ac), 956 feet east of No. 5, Jno. Rabb survey.

In Gregg County, Amada Oil Company, Fort Worth, was granted a permit to drill D. L. Magrill 6, (45-ac), 990 feet from west and 330 feet from south line of D. Sanchez survey. Smith County Oil & Gas Company, Longview, was granted a permit to drill M. Fenn 2A, (4-ac), 267 feet from west and 156 feet from south line of D. Ferguson

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survey. Meridian Petroleum Corporation, Tulsa, Oklahoma, was granted a permit to drill T. W. Lee 5, (53-ac), 330 feet from east and 50 feet from south line of Rigsby-Crosby survey. Magnolia Petroleum Company, Dallas, was granted a permit to drill W. E. Jones 11, (112-ac), 812 feet east of No. 8, D. Sanchez survey. Humble Oil & Refining Company, Houston, was granted a permit to drill G. W. Willingham 8, (100-ac), 350 feet from north and 938 feet from west line of D. Sanchez survey.

In Guadalupe County, B. C. Lanier, Staples, was granted a permit to drill Q. J. Lawman 1, (58-ac), 310 feet from north and 350 feet from west line of Geo. Allen survey.

In Hardin County, E. W. Skinner et al, Saratoga, was granted a permit to drill Kirby 18, (2-ac), 20 feet from north and 25 feet from east line of BBB&C survey.

In Harris County, Magnolia Petroleum Company, Dallas, was granted a permit to drill Wm. Martens 1, (250-ac), 600 feet from west and 5600 feet from south line of J. House survey. Donald W. Moore, Houston, was granted a permit to drill E. H. Jones 1, (2-ac), 65 feet from north and 406 feet from east line of Jos. House survey; B. F. Nelson 1, (3-ac), 156 feet from north and 222 feet from west line of Jos. House survey. L. L. Lanier, Pelly, was granted a permit to drill E. S. Jones 1, (4-ac), 74 feet from east and 172 feet from south line of Wm. Scott survey.

In Jack County, Tommie Minnich, Archer City, was granted a permit to drill C. C. Bloodworth 1, (160-ac), 1800 feet from north and 450 feet from west line of G. W. Robnett survey.

In Limestone County, Waite & Kadaner, Dallas, were granted permit to drill B. B. Barron 2, (640-ac), 745 feet from north and 2827 feet from east line of E. Mabry survey.

In Live Oak County, Jacob, Buzzini & Pickett, Inc., San Antonio, were granted a permit to drill O. M. Withers 1, (160-ac), 1050 feet from north and 370 feet from west line of Jno. Parks survey.

In Montgomery County, Humble Oil & Refining Company, Houston, was granted permits to drill (amended location), H. N. Moore 33, (1075-ac), 600 feet from northwest and 466 feet from northeast line of L. Smith survey; H. N. Moore 35, (1075-ac), 980 feet northeast of No. 30, L. Smith survey; M. A. Emory 6, (400-ac), 962 feet from north and 443 feet from west line of No. 33 W. C. Ry. survey; H. N. Moore 29, (1075-ac), 1569 feet northeast of No. 32, L. Smith survey; H. N. Moore 34, (1075-ac), 933 feet southwest of No. 31, L. Smith survey. Strake Petroleum Corporation, Houston, was granted permits to drill O. Etheridge 1, (172-ac) 467 feet from north and east lines of S. H. Bryan survey; K. G. Schaefer 1, (600-ac), 1400 feet from south and 468 feet from east line of C. B. Stewart survey. Abercrombie & Harrison Oil Company, Houston, was granted a permit to drill Jno. Massey 2, (160-ac), 1285 feet from north and 466 feet from west line of No. 16, T&NO survey. Amerada Petroleum Corporation, Fort Worth, was granted a permit to drill South Texas Development 4, (83-ac), 466 feet from east and 330 feet from south line of No. 14, C. A. West survey. Tide Water Oil Company, Houston, was granted a permit to drill J. W. Lewis 20, (698-ac), 1493 feet from south and 467 feet from east line of C. B. Stewart survey. Houston Oil Company, Houston, was granted a permit to drill Mrs. H. N. Moore 1, (100-ac), 375 feet from north and 650 feet from east line of L. Smith survey. Sun Oil Company, Houston, was granted a permit to drill W. B. Foster 2, (640-ac), 933 feet southwest of No. 1, Jno. Bricker survey.

In Matagorda County, United North & South Development Company, San Antonio, was granted a permit to drill Buckeye 1, (20-ac), northeast corner of Tract 14, J. C. Keller survey.

In Maverick County, C. L. Mahaney, Dallas, was granted a permit to drill E. Kifuri 1, (448-ac), southwest corner of Poindexter & Burns Survey No. 31.

In Nueces County, C. N. T. Oil Company, Corpus Christi, was granted a permit to drill L. M. Vance 1, (125-ac), 330 feet from west and 1980 feet from south line of No. 402 survey. Jno. F. Camp, San Antonio, was granted a permit to drill R. King 1, (960-ac), 1980 feet from north and 660 feet from west line of northeast quarter of Section 29.

In Palo Pinto County, States Oil Corporation, Eastland, was granted a permit to drill Allen-Ritchie 2, (160-ac), 100 feet east of No. 1, Section 2, S. P. Ry. survey.

In Pecos County, Black et al, Fort Stockton, were granted a permit to drill Pecos Valley 2, (80-ac), 2230 feet from southwest and 1320 feet from southeast line of Section 34, Block 3, H&TC survey.

In Polk County, Shell Petroleum Corporation, Dallas, was granted a permit to drill Davis-Holmes 1, (543-ac), 376 feet from northeast and 425 feet from southeast line of M. C. Swinney survey.

In Rusk County, McClanahan & Venable, Tyler, was granted permits to drill J. A. Birdwell 16, (150-ac), 330 feet from south and 1093 feet from west line of M. J. Pru survey; 15, 330 feet

from west and 990 feet from south line of survey; 14, 660 feet east of No. 15; 13, 660 feet east of No. 14; 12, 660 feet east of No. 13. Humble Oil & Refining Company, Houston, was granted a permit to drill P. R. Guerin 10, (130-ac), 745 feet from north and 465 feet from west line of T. J. Martin survey. Magnolia Petroleum Company, Dallas, was granted a permit to drill J. C. Bradberry 9, (90-ac), 630 feet from north and 330 feet from east line of R. W. Smith survey. Sinclair Prairie Oil Company, Fort Worth, was granted a permit to drill M. Kennedy B 4, (52-ac), 330 feet from north and 1182 feet from west line of D. Clark survey. Sun Oil Company, Dallas, was granted a permit to drill R. J. Hendon 7, (120-ac), 665 feet west of No. 5, J. Ximinez survey.

In Starr County, Sioux Oil Corporation, Rio Grande City, was granted a permit to drill Goodrich-Woods 4, (40-ac), 300 feet northwest of No. 1, Porcion 81, Block 1, Tr. 15.

In Upshur County, Rancho Oil Company, Fort Worth, was granted a permit to drill H. W. Moyers 5, (50-ac), 530 feet from north and 330 feet from west line of A. T. McGee survey. B. H. Rogers, Oklahoma City, Oklahoma, was granted a permit to drill E. H. Brawley 5, (56-ac), 780 feet from north and 330 feet from east line of McKinney-Williams survey. Magnolia Petroleum Company, Dallas, was granted permits to drill H. Hampton 14, (169-ac), 660 feet north of No. 11, D. Ferguson survey; 13, 433 feet from north and 330 from west line of survey.

In Ward County, Penn Oil Company, Dallas, was granted a permit to drill H. F. Wilson 1, (40-ac), 330 feet from south and east lines of Section 11, Block 34, H&TC survey.

In Webb County, Wise & Jackson, Tyler, were granted a permit to drill J. M. Garcia 1, (140-ac), 150 feet from north and 450 feet from east line of Survey No. 1100. Will Ohlhausen, Austin, was granted a permit to drill Jones 1, (100-ac), 273 Vs. from east and 516 Vs. from south line of Survey No. 1640.

In Waller County, Trapshooter Reilly Oil & Royalty Company, San Antonio, was granted a permit to drill C. A. Menke 1, (328-ac), 600 feet from north and 250 feet from east line of J. Liendo survey.

In Wheeler County, Rogers & Horner, McLean, were granted a permit to drill J. O. Clark 1, (160-ac), 990 feet from south and west lines of Section 6, Block 24, H&GN survey.

In Wichita County, Langford Oil Company, Wichita Falls, was granted a permit to drill E. F. McClinton 4, (10-ac), 150 feet from north and east lines of Section 33, H&GN survey.

In Young County, W. E. Fitzgerald,

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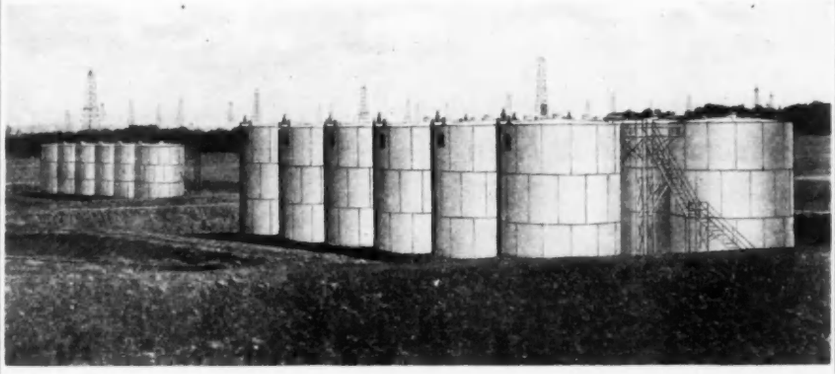

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Wichita Falls, was granted a permit to drill Marshall 1, (35-ac), 150 feet from north and east lines of 3401 TE&L survey. J. R. Wilson, Newcastle, was granted a permit to drill G. W. Terrell 1, 1433 feet from north and 450 feet from west line of W. Williams survey. B. C. Gilmore, Markley, was granted a permit to drill G. G. Garrett 1, (160-ac), 150 feet from west and 1170 feet from south line of Block 11, YCSL survey. W. G. Tullus, Graham, was granted a permit to drill W. L. Andrews 1, (40-ac), 150 feet from north and west lines of 1826 TE&L survey. Worth Oil Company, Wichita Falls, was granted a permit to drill G. G. Garrett 6C, (140-ac), 900 feet from north and 650 feet from east line of Block 12, YCSL survey.

15-Day California Shut-Down Is Asked

Los Angeles, March 17.—A group of independent oil operators on Friday in mass meeting in the offices of Oil Producers Sales Agency, by resolution declared in favor of a complete shut-down of oil production in California for a period of 15 days, and the resolution was approved by the board of directors of the sales agency. The board instructed that its committee endeavor to put the terms of the resolution in effect.

Provision would be made to protect labor, ample crude would be made available to refineries and ample gas would be produced to care for ordinary public needs.

Quake damage to pipe lines, refineries and compressor plants were taken into consideration. Standard Oil Company, Associated Oil Company, Shell Oil Company, and Union Oil Company had early in the week ordered their wells in Los Angeles basin shut in for a period of 10 days and state production for three days has been down to or less than 400,000 barrels.

President Ralph B. Lloyd of the sales agency gave as reasons for such resolution "for public good, safety of life and property and consideration of inexhaustible resources" of the state.

It is generally believed that the holiday as suggested is not only possible but is probable.

Large Dry Gasser In Foard County

Wichita Falls, Texas.—Rated as the largest dry gasser scored in the North Texas district in years, the third test on the Navarro structure, western Foard County, by The Texas Company on the Johnson ranch gauged 43,000,000 cubic feet daily from second gas sand logged at 3125-27 feet. It registers 1050 pounds rock pressure. Plans are to try and kill the flow and deepen. This wildcat cased off a flow originally estimated at 30,000,000 cubic feet and later declined to 16,000,000 cubic feet daily from first sand at 3088-3112 feet, with a surface elevation of 1625 feet. The companys' two previous tests on this block almost qualified as commercial oil producers, but were deepened beyond the Cisco series, productive zone, and abandoned.

Young County gives promise of adding two wildcat producers from the deep zone. T. G. Shaw et al's I. N. Farmer 1, NWc Section 3, J. Poitevant Survey, Abstract 228, and about one mile southeast of nearest production, filled 1300 feet with oil in one hour after drilling into what appears to be a stray sand at 3432-35 feet. Production in the nearby pool is derived from the 2800 and 3800-foot levels. A string of 5-inch pipe is to be set in Farmer 1, which topped the Palo Pinto lime at 1401 feet, with a surface elevation of 1226 feet. In western Young County, Degener & Murrell's wildcat on the Ed. Johnson land, A. McLennan survey, Abst. 180, encountered show oil at 3968 feet, and halted drilling to test an increase in oil from gray lime at 3993-4002½ feet. It is about two miles southeast of Belknap, and far removed from shallow or deep production.

Humble Plans Another Wildcat At Roanoke

Houston.—Humble Oil & Refining Company will drill another test in the Roanoke district of Jefferson Davis Parish, Louisiana, it was announced this week following abandonment of Devilbiss 1 at 5121 feet.

Abandonment of Devilbiss 1 is not to be taken as condemnatory as mechanical difficulties resulting from a crooked hole caused cessation of drilling. The test is located 1650 feet south and 250 feet west of the northeast corner of Section 14-9s-4w. Devilbiss 2 will be drilled 200 feet south of the crooked hole.

Tide Water Associated Passes Preferred

Earnings of Tide Water Associated Oil Company for 1932 were equal to 32 cents per common share after deducting preferred share dividends. The consolidated net profit was $4,718,694, compared with a loss of $5,818,671 for 1931.

Although the preferred dividend was earned in 1932 the condition in the first quarter of 1933 was that the dividend currently was not being earned, so directors voted March 8 to pass the dividend on the six per cent cumulative convertible preferred stock due April 1.

Colonel Murray Refuses To Meet Investigators

Oklahoma City.—Resuming its work after a four-day vacation, the Oklahoma Senate Oil Investigating Committee struck a snag when it subpoenaed Colonel Cicero I. Murray, director of military enforcement of proration orders and cousin of Governor Murray. Called for the ninth time Colonel Murray refused to appear for further questioning in regard to personal and proration bank accounts, and stated that he had no intention of appearing at any future session of the committee. Murray based his refusal upon the fact that he is an officer on active duty in command of troops in the Oklahoma City pool and, as such, is responsible directly to the governor as commander-in-chief of the state militia.

He then pointed out, through a letter from the governor, his instructions not to appear. Colonel Murray's letter to the committee and the governor's letter to Colonel Murray were as follows:

"Advised by the sergeant-at-arms that my presence is requested to testify again before the senate oil investigating committee, I wish to advise that I am in active duty as an officer in command of troops in the Oklahoma City oil field and as such I am responsible directly to the governor as commander-in-chief of the state militia and I am unable to attend without the permission and authority of the governor, and I am attaching hereto a letter from the governor which is self-explanatory and by reason of such letter and such service must therefore decline to attend as a witness at this time or in the future by reason of the request of the chief executive which I must obey."

The letter of Governor Murray follows:

"In pursuance of advice from you that you have been repeatedly called as a witness before the senate investigating committee and that they now request your attendance before the committee and your request as to what you shall do in respect to attending and as to recognizing other subpoenas, I wish to advise that you are now in active duty in the Oklahoma national guard, in command of troops therein, under my order and direction, and you shall so remain in said position and active service and under the laws of the state of Oklahoma and not subject to any process, and immune from arrest for any offense other than treason or a felony; and you shall proceed to perform your duty as such officer and not obey any request of subpoena to testify or appear except with my permission granting the right."

In a lengthy statement read into the committee record Senator Woody Dixon pointed out that considerable testimony regarding checks, bank deposits and drafts has been introduced before the committee, showing that Anderson-Prichard Oil Company and Slick-Urschell, Incorporated, have advanced approximately $30,000 to Cicero I. Murray, which was deposited to his personal account. Tracing down numerous leads the committee has heard testimony indicating advances by practically all of the major companies operating in the Oklahoma City pool.

Concluding his statement Senator Dixon said:

"Due to the attitude of the Hon. William H. Murray, chief executive of this state, through his letter dated March 13, 1933, ordering the said Colonel Cicero I. Murray not to appear before the oil and gas investigating committee now or at any time in the future, the said committee is compelled to pursue other lines in order to obtain the information necessary and desired."

Roy M. Johnson, republican leader and independent oil man of southern Oklahoma, testified to having advanced approximately $2000 to Colonel Murray during a preliminary investigation of proration in the Oklahoma City pool. Through Johnson's testimony it was learned that during the first three months of 1931 Governor Murray had conducted an undercover investigation of conditions in the Oklahoma City pool. Investigative work was done by Johnson and Cicero Murray and it was during this time that Johnson made several advances or loans to Colonel Murray. According to the testimony none of these loans or advances have been paid back.

Previous testimony had shown a loan from a royalty owner in the Oklahoma City pool to Colonel Murray.

Just what action the committee would take regarding Colonel Murray's refusal to appear for further investigation could not be anticipated as the week drew to a close. It is evident, however, that if the investigation is to continue, the committee must be given more power especially in the matter of forcing witnesses to attend.

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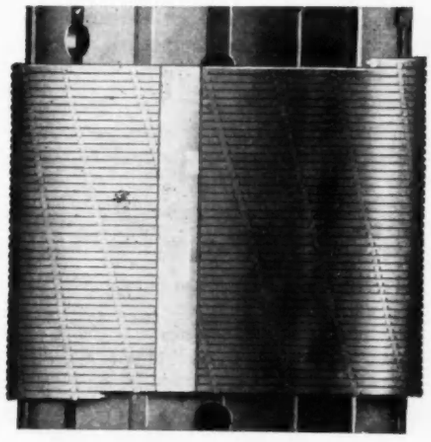

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31,642 Barrels Flush Oil From 12 Oklahoma Wells

Tulsa.—The completion list of the week included 12 oil wells, of which two were old wells drilled deeper and one was an old well plugged back; two gas wells, nine dry holes, and one abandoned location. New footage drilled was 50,688 feet in 19 wells plus 289 feet additional drilling in old wells, or a total of 50,977 feet.

Total new production was 31,642 barrels of oil and 21,000,000 cubic feet of gas, the latter figure based on initial production from wells which produced only gas. The Oklahoma City pool, which is coming in on the completion record with only a few wells per month, accounted for 27,528 barrels of new production from two wells.

Company, Well and Location	Init. Prod. Bbls.	Depth
Carter County—		
Lundy et al, Major 1, ne se se 25-1s-3w (owdd)	528	2596
Comanche County—		
Clyde Becker, Ritchie 1-A, se sw sw 19-2n-9w	*	2143
Creek County—		
J. E. Crosbie, Escoe 2, nw ne sw 26-18n-8e	500	1348
Samples & Mann, L. Hutton 1, sw se se 5-18n-9e	*	3120
Hughes County—		
Pringle & Marshall 11, Narcomey 1, ne nw sw sw 10-7n-8e	702	2929
Milan et al, Holmes 2, sw se sw sw 11-7n-8e	¶20	3009
F. O. Freeman et al, Willingham 1, sw sw ne 24-7n-8e	lcn.	abd.
Jefferson County—		
Farlyn Oil, O. W. Seay 2, ne sw se 3-7s-5w	75	1095
(Well No. changed from 5 back to 2)		
Muskogee County—		
Christie, Tiger 1-A, se ne ne 1-14n-18e	*	840
Mack Drilling, Richards 2-A, cel ne sw 34-16n-15e	¶1	1138
Noble County—		
Shell et al, Perome 1, csw sw 8-20n-2w	1520	5306
Okfuskee County—		
Vivian Oil, Johnson 1-A, se sw nw 34-11n-11e	*	2566
Oklahoma County—		
Inland Development, Corsican 1, se nw nw se 22-11n-3w	11,904	6584
Inland Development, Wisconsin 1, ne sw nw se 22-11n-3w	¶10-15,624	6584
Okmulgee County—		
R. D. Pine, Monday 2, 60 ft w cnw nw 6-12n-14e	25	2762
J. H. Rebold, Roberts 4, cnl ne sw 28-13n-11e	*	2205
Osage County—		
A. H. Kasishke et al, No. 1, se se nw 24-24n-7e	*	740
Mohawk Oil, No. 2, ne nw ne 10-26n-9e	*	1968
Pittsburg County—		
J. E. Weible, Jennings 1, nw se sw 26-9n-16e	*	664
Pontotoc County—		
Lake Oil, Malloy 2, sw nw sw 30-5n-5e (owdd)	700	2579
Harris & Hayes, Brown 1, ne sw ne 28-5n-6e	*	2892
Pottawatomie County—		
Gypsy Oil, Gosland 1, nw nw sw 9-8n-5e (owpb)	15	4111
Seminole County—		
Tidewater Oil, Lasley 1, ne ne sw 19-9n-6e (owdd)	27	4132
Dickson Pet. et al, Bruner 1, ne se se 20-9n-6e	22	2795

*Failure. †Junked. ¶Million cu. ft. gas.

Governor Murray Re-Opens Oklahoma City March 14

Oklahoma City. — Pointing out that the new proration law now pending in the legislature probably will be enacted within 10 days or two weeks and the dire necessity for Oklahoma City producers taking their March allowables, Governor William H. Murray, by executive order, reopened the Oklahoma City pool at 7:00 a.m., March 14. Under the order signed the preceeding day producers are permitted to take only proportionate daily allowable under orders of the Oklahoma Corporation Commission and under supervision of Col. Cicero I. Murray. The executive military order of March 13 was as folows:

"Whereas, on March 4, 1933, an executive military order was made and executed by the undersigned as the Governor of the State of Oklahoma, and Commander-in-Chief of the Militia, causing the shut down of all producing wells in the Oklahoma City field, except water wells, such by reason of the excessive oil production for the first days of March, and the waste of gas incident thereto, and the danger to the lives of the citizens of Oklahoma City, and the property thereof; and for the further reason that the Sinclair Company and others overproduced their properties; and,

"Whereas, in said order, it is stated that the same was to be in effect until the passage of the pending proration law in the legislature now in session, it now appears that it will probably be 10 days or two weeks until said law goes into effect; and,

"Whereas, it appears that a necessity exists for the producers in said field to take therefrom their March allowable, under the orders of the corporation commission, which could not be done if the field remains closed, until the enactment of the above mentioned statute, which would occasion a tremendous loss to the producers in the field and the gross production taxes to the state; and,

"Whereas, I am advised that the corporation commission will enter an order requiring the producers to take daily the production to which they are entitled and the production can be produced in an orderly manner, without waste of gas and danger;

"It is therefore ordered that the Military Executive Order of March 4, 1933, is hereby rescinded and set aside as of 7:00 a.m., March 14, 1933, after which date and hour the producers in the Oklahoma City field, not overproduced of their current allowable, may open their wells, and proceed to take therefrom the balance of their March allowable, to be taken in accordance with the orders, rules, and regulations of the corporation commission."

During the eight days which elapsed between the two executive orders production from the pool averaged 45,327 barrels daily, more than 100,000 barrels daily less than the indicated demand. It is believed that under the shut down many producers and purchasers were feeling the pinch and apparently some unrevealed agreement has been made with the governor. The new proration law which the administration feels so confident will be enacted within the next two weeks will provide for an entirely new arrangement for prorating flush fields of the state. As it now stands the bill calls for a state umpire and assistant to be appointed by the corporation commission, whereas, it was originally intended that these officials be appointed by the governor. The bill passed the house of representatives by a vote of 82 to 26, thereby assuring attachment of the emergency clause in event it meets no serious opposition in the senate. A bill levying a tax of one-eighth of a cent per barrel for administration of proration expense passed the house by a vote of 93 to 17. As amended the proration bill places appointment of the proration attorney under the governor.

Anticipate Spring Pick-up In Oklahoma Activities

Tulsa.—Full effect of the banking shut down apparently was reflected in the list of new operations in Oklahoma during the past week when 18 first reports came from 11 counties, a decrease of two starts below the total for the previous period.

General conditions point toward an appreciable pick up in new work during the early Spring and it is not unlikely that from this time and during the remainder of the year a gradual increase will be observed. Activities during 1933 should exceed those of 1932 by a comfortable margin.

With Oklahoma City definitely beyond its peak, although still a serious market threat, and many pools of the Seminole district approaching the settled stage, it appears evident that operators both large and small will be forced to step up activities. This should be further influenced by the excellent condition of crude oil storage in both Kansas and Oklahoma. Reports of the week were as follows:

Westoak Gasoline Company announced the location of two new tests in Beckham County, Markham 1, CNW SW Section 22-9n-23w, and Bugle 1, NWC Section 28-9n-23w.

There were three first reports in Creek County: Billingslea et al's Arbuckle 1, SW SW NW Section 33-14n-8e, a location; Freeland et al's Perryman 1, 130 feet W CSE SW Section 30-16n-9e, a cellar; Williams et al, Stewart 1-A, SE NE NE Section 8-16n-10e, rigging up.

In Grady County, Joe Ray was skidding the rig from his No. 1 Johnson to No. 2 in SW NE NW Section 6-3n-5w.

In Hughes County, McCoy et al's Haskett 1, SWC SE Section 15-7n-8e, was a machine; Mainard et al's Moore 2, in the same county, SW NW NE Section 22-7n-8e, was a location.

In Okfuskee County, Wells et al announced the location of their Moore 2, SW SE NE Section 14-10n-11e.

Two first reports and a correction were made in Oklahoma County. Phillips Petroleum Company was digging cellar on its Hardcastle 1, NW NE SE SW Section 22-11n-3w; Haynes Brothers' Little 1, NE C Section 27-11n-3w, was drilling below 2000 feet; Transit Oil's Surbek 1, SE SE NE SW Section 22-11n-3w, a rig, was formerly reported Harrell-Davis' Surbek.

In Pittsburg County, J. E. Weible's Jennings 1, NW SE SW Section 26-9n-16e was dry and abandoned after having a hole full of water in sand at 657 to 664 feet.

Brydia's Lane 1, SW SW NW Section 30-5n-5e, in Pontotoc County, drilling below 1210 feet was corrected to be Lane 2.

In Pottawatomie County, two first reports and a correction were announced. Sinclair Prairie Oil's Copeland 1, NWC Section 5-6n-5e, was building rig. Barrett's Wyatt 1, NE NW NW Section 10-7n-4e, was a cellar. Southern Oil's Taylor 1, NW SE NE Section 4-8n-5e, was rigging up, formerly reported SW SE NE.

Three first reports were announced in Seminole County: Pierce et al's Phillips 2, SE SW SE Section 8-9n-6e, building rig; Gypsy Oil's Halsey 1, NE NW NE Section 17-9n-6e, a location; Gypsy Oil's D. Rentie 3, NW NE NE Section 17-9n-6e, a location.

In Stephens County, Doyle Oil Company announced the location of their Cunningham 1, SE NE NW Section 4-1n-6w.

Oklahoma City.—The sub-committee of the Oklahoma House Committee on Oil and Gas recommended on Thursday, March 16, the increase of gross production tax from the present figure of three per cent to five per cent. With a relatively short amount of time left of the Fourteenth Session and practically nothing done in the way of passing revenue producing measures both houses of the legislatures are grasping desperately at any means to rescue the state from further deficit. Under the lash of the chief executive the legislature already has been forced to pass an income tax law.

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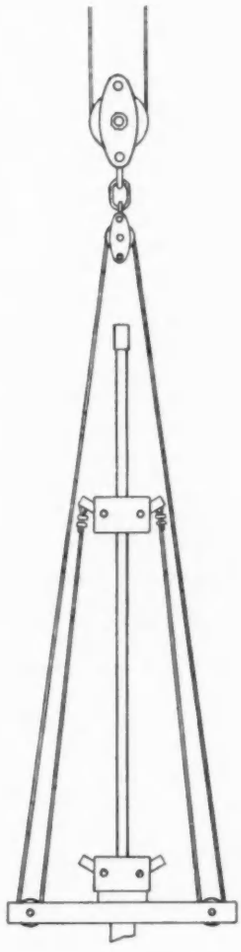

U. S. PATENT No. 1,894,912, issued January 19, 1933 to H. C. Otis, reads as follows:

"The method of inserting a string of coupled sections of tubing into a well casing containing fluid under high pressure, consisting in sealing the lower end of the tubing and intermittently forcing the tubing into the casing in short steps by laterally-balanced pressure applied longitudinally of the tubing through positive gripping means applicable to the tubing sections intermediate the ends thereof."

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Discovery Well Produces From Simpson Dolomite

Tulsa.—Watchorn Oil & Gas Company's Zoeller 1, CNW NW SE, Section 5-6n-5e, discovery well located slightly over a half-mile north of the town of Sacred Heart and several miles east of the South St. Louis pool in southeastern Pottawatomie County, was deepened six feet during the week to a total depth of 4196 feet still in Simpson dolomite, where it yielded 220 barrels in nine hours. Production is reported to have been increased approximately five barrels per hour from the dolomite. Viola lime was logged at 4043 feet, pay at 4110 feet. Simpson dense at 4115 feet, and dolomite from 4184 to 4196 feet.

Jones & Hatcher's Harris 1-A, CSE NW NW, Section 22-10n-7e, 1½ miles northeast of the town of Cheyarla in northeastern Seminole County, had a small showing of oil from the Cromwell sand at 3580 to 3590 feet and were waiting on cement to set on the eight-inch. Booch sand, logged from 3460 to 3480 feet, was broken and dry.

Carter Oil Company et al's Community-Keokuk 1, CN½ NW NE, Section 2-10n-6e, discovery well approximately six miles northeast of the Searight pool, produced 1810 barrels in 24 hours, flowing through tubing on March 16. Production from the new well is coming from Misener sand at 4090 to 4106 feet. The test originally was scheduled to go the Wilcox sand, Misener sand production having been only remotely considered.

Arbuckle Lime Well Back on Production

Wichita, Kansas.—Slick et al's Orth 1, CSE SE NE, Section 27-18s-10w, discovery well in northwestern Rice County, has been reopened to production after being shut in since completion in August, 1932. Originally the well did 815 barrels in 10 hours on the pump, production coming from Arbuckle "Siliceous" lime at 3236 to 3243 feet, the total depth. Placed on the pump during the past week it yielded 597 barrels in 13½ hours at the end of which time rods parted. Operators succeeded in recovering the rods in a short time and resumed pumping but found the well cutting approximately one per cent B.S.

One of the most interesting among recent completions in western Kansas areas is F. H. Hollow et al's Schmidt 1, CSW SE NW, Section 17-22s-3w, approximately one mile north of the Hollow pool in western Harvey County. The well was reported to have produced 615 barrels in seven hours lifting with gas from the Chat horizon topped at 3148 feet. Production comes from Hunton lime at 3438 to 3461 feet, principal producing horizon in the Hollow pool. Operators have made application to the Public Service Commission seeking to have the new well declared as producing from a separate source of supply. Hearing was to have been held on Friday, March 17, but action of the commission has not yet been reported.

Ramsey et al were drilling below 2230 feet in their Smith 1, NW NW SW, Section 32-19s-9w, in the newly discovered Church Acre pool near the town of Chase, in Rice County. The test is located approximately in the center of a large block owned by the Gypsy Oil Company.

Barton County is the scene of two interesting wildcat tests both of which have reached depths which will warrant their being closely watched. Vickers Petroleum Company was cleaning out to drill deeper in Kerr 1, CNW NW SE, Section 15-16s-12w, four miles east of the town of Verbeck, in the northeastern portion of the county. Top of the Kansas City-Lansing was logged at 3100 feet and eight inch set at 3103 feet, the total depth. In the southern portion of the county, one and one-half miles southeast of the town of Ellinwood, Noble Drilling Company et al were coring below 3290 feet trying to locate top of the Arbuckle "Siliceous" lime in their Grant 1, CSW SW, Section 4-20s-11w.

Kansas Majors on Lookout For Additional Reserves

Wichita, Kansas.—McPherson County took a commanding lead in the new work reported from Kansas areas when eight starts were announced. Total for the state was increased to 12 first reports through activity in Cowley, Harvey, Rice and Sumner counties, each of which accounted for one start.

During recent weeks names of major companies have become more prominent on lists of new work, and it appears evident that both in Oklahoma and Kansas the majors are definitely on the lookout for additional reserves. This seems specially true of companies owning no production in the Oklahoma City pool.

In Cowley County, in the Winfield Townsite area, Slocum et al were erecting machines on their Mayers 1, NE SW SW Section 22-32s-4e.

In Harvey County, Shell Petroleum's Schmidt 1, SE C NE Section 5-22s-3w, was building rig.

Eight first reports were announced in McPherson County: S. L. Clum, Nelson 1, CSE NW Section 12-18s-4w, a location; Gypsy Oil Company's Lovett 2, NE SW NW Section 24-19w-2w, rig on ground; Lario Oil and Gas Company's Boals 4, NW SE NW Section 24-19s-2w, a rig on ground; Wolf Creek Oil's Krehbiels 5, NW NE NW Section 25-19s-2w, rig on ground; Dickey Oil's Decker 4-B, SE NW SE Section 35-19s-2w, building rig; Sever-Hessman's Schrag 1, SW SW SE Section 22-19s-4w, cellar; Gypsy Oil's Stuckey 2-C, NEC Section 33-20s-3w, an old well drilled deeper from 3459 and shot with 40 quarts at 3475 to 3478 feet, has 500 feet of oil in the hole; Investor-Mineral Development Company's Kaufman 1, SE C Section 35-21s-3w, slush pond.

In Rice County, Douglass-Youker's Townsite 1, Block 50, NE¼ Section 31-19s-9w, had slush pond dug.

In Sumner County, Gypsy Oil Company had the rig on ground for their Indruze 3, NE NE SE Section 17-35s-3w.

Dry Hole Percentage Drops in Kansas

Wichita, Kansas.—Kansas operators materially reduced their dry hole percentage during the week when only one failure was listed among seven completions. During the past six weeks the average rate of completions per week has been seven wells with a fairly constant relationship between first reports and completions. This indicates that operators no longer are staking locations which may remain inactive for considerable periods of time before making any progress toward completion.

Company, Well and Location	Init. Prod. Bbls.	Depth
Ellsworth County—		
Sinclair Prairie, Stratman 2, se se sw 1-17s-10w	135	3270
Magnolia Pet., Andred 1, nw nw sw 7-17s-10w	60	3224
Slick-Pryor & Lockhard, Heiken 1-B, se c 23-17s-10w	65	3262
Harvey County—		
Reaser-Lee No. 1 Wall, nw c sw 4-22s-3w	1262	3507
McPherson County—		
Stanolind-Amerada, Zerger 4, sw nw se 16-21s-3w	474	3405
All States Petroleum No. 3 Wall, sw sw se 21-21s-3w	25	3145
Osage County—		
Beggs-Smith, Wood 1, cse nw 21-14s-15e (owd)	*	2627

*Failure. †Junked. ¶Million cu. ft. gas.

Plug Once Promising Reno County Wildcat

Wichita, Kansas. — After giving promise of further defining a northeast-southwest trend of siliceous lime production through Reno County, Skelly Oil Company's Cole 1, CSE NW Section 4-26s-8w, 17 miles from the nearest production of any importance, is being plugged to abandon. Operators had 2000 feet of water in the hole at 4225 feet from Wilcox sand topped at 4215 feet. Drilling was continued to 4320 feet, 12 feet into Arbuckle lime, at which depth the test is being abandoned. Reports of the previous week stated that a showing of oil was had through 2000 feet of water and that particles of lime were showing in cuttings taken from total depth at that time. This was at first construed to mean that Arbuckle lime had been scratched and indicated that possibilities for production from that formation were good. Six-inch casing was lowered to shut off water from Simpson formations but when completed the test showed for 800 feet of fluid, mostly water.

In Sumner County, Deal Oil & Gas Company had the rig up on Tompkins 1, in SWc Section 26-33s-1e, and also on their Kelly 1, NW SW Section 2-33s-2e.

In Pratt County, Ninnescah Oil & Gas Company was underreaming six-inch to 3653 feet and drilling below 3665 feet on their Hardesty 1, SW SE SE Section 28-27s-11w.

In Reno County, Witt et al's Crotts 1, NE NW NE Section 27-26s-10w, was still shut down at a total depth of 266 feet.

In Greenwood County, Charles Reser was drilling below 1080 feet on his Hull 1, NW SE Section 8-26s-9e, and Wright et al's Madren 1, SW SE SW Section 29-22s-12e, was a machine.

Phillips Petroleum's Weibe 1, in Harvey County, NE SE NE Section 30-23s-2e, was underreaming eight-inch to 3150 feet and were cleaning out at a total depth of 3200 feet.

In Stafford County, Atlantic Oil's Gates 1, NW SE Section 27-21s-13w, was drilling below 1250 feet.

Noble Drilling Company's Grant 1, CSW SW Section 4-20s-11w, Barton County, was drilling below 2602 feet. Also in Barton County, Ranken et al's Sooey 1, CSW NE Section 34-18s-12w, was shut down at a total depth of 2100 feet; Vickers et al's Kerr 1, NW NW SE Section 15-16s-12w, set 10-inch at 2500 and was drilling below 2950 feet.

In Marion County, Ferrell et al's Williamson 1, CNW SE Section 21-19s-4e, was underreaming six-inch at 2667 feet.

Reports from tests in McPherson County were as follows: Clum et al's Nelson 1, CSE NW Section 12-18s-4w, was announced as a location; Shawver's Nichols 1, NE NW NW Section 28-17s-1w, set 10-inch to 1968 feet and was drilling below 2050 feet.

In Saline County, Lario Oil & Gas Company's Fulton 1, SW SW NW Section 14-16s-2w, set 15-inch to 373 feet and was drilling below 510 feet.

The Ellsworth County test of Bickford, Burke 1, CNW SW Section 14-14s-9w, which was spudded 50 feet and shut down in December was declared abandoned.

In Rooks County, Krueger et al's Rathburn 1, SE NW SW Section 14-9s-16w, was a rig.

In Graham County, Schleimeyer et al's Smith 1, SEc Section 24-8s-25w, had top of K.C. lime at 3614 feet (corrected depth); seven bailers of water at 3725 feet, a show of oil at 3781 feet, set six-inch at 4030 feet and was drilling by a cave-in at 4080 feet.

200 Cars U. S. Motor Bring 2⅛ Cents

Dallas, Texas.—The purchase of 200 cars of U. S. Motor grade of gasoline from East Texas refineries at 2⅛ cents per gallon to be delivered this month has been made by J. M. Bradshaw, local marketer. This gasoline will be moved via tank cars to Texas Coast, thence via tanker to a jobbing concern at Carteret, N. J.

Gulf Shows Profit Of $2,743,492.17

Net profit of the Gulf Oil Corporation for 1932 was $2,743,492.17, after all charges. The concern had operating income of $74,065,120.87 for the year. Taxes, depletion, depreciation and retirements brought the net operating income down to $999,307.25. Non-recurring income raised this to $8,951,572.28, from which was deducted all interest charges of $6,208,080.41 to leave the net profit item.

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East Texas Problems Baffle Executives of Oil Industry

(*Continued from page 10*)

ject being tabooed by anti-trust laws of the state, while objections were sustained also in regard to imposing a fixed policy governing crude withdrawals. Contention was made that some purchasers have stored oil under most unfavorable conditions in order to be of aid in providing relief for unconnected wells.

Recommendations tendered to the purchasers and transporters of crude oil in the state of Texas by the five organizations follow:

1. That no oil produced in excess of the allowable, or the by-products of such oil be purchased, transported or stored.
2. Further curtailment of withdrawals from storage.
3. Discontinue the practice of making loans for either development or the construction of pipe lines which provide for retirement out of oil at below the posted price.
4. Condemn unnecessary drilling.
5. That you nominate equitably your purchases from all fields in the state, taking into consideration the depth of the wells.
6. In view of the sacrifices made by producers in sympathy with the principles of conservation and in order to prevent the further loss of adherents to such principles as well as to prevent the abandonment of stripper wells, that the price of crude be materially increased.
7. Before increasing the nominations for any field due consideration shall be given to the effect of such action upon the sentiment of other fields.
8. Discontinue the practice of accepting split connections.
9. In case of any violation of Railroad commission orders by any producer that proper steps be taken to revoke all existing pipe line permits issued to such producer.
10. The absorption of distress oil by purchasers by connecting unconnected wells and leases in all districts of the state.
11. That no tender of oil for transportation shall be accepted by any carrier unless and until every possible precaution has been taken to ascertain that such oil has been legally produced.
12. Request your undivided assistance and cooperation in the immediate fulfillment of the foregoing recommendations.

Austin, Texas. — Amendment was offered Friday to the "conservation commission" bill in the House, providing that appointments to the commission by the Governor must be affirmed by two thirds vote in the Senate. This is said to be acceptable to Governor Ferguson and removes much objection on the part of the legislators.

Reporting as a committee, the heads of the five regional oil bodies pledged their respective organizations to render full cooperation in the promulgation and enforcement of all reasonable and valid orders of the Texas Railroad Commission. More active assistance to the various enforcement officers was pronounced necessary, while no intimation was made of a desire to deprive the present members of the commission of jurisdiction over oil and gas conservation and proration enforcement matters, although rumors were circulated to that effect in advance of the Fort Worth conference.

Belief that the reasonable market demand for crude production from fields in Texas during the balance of the year will average about 800,000 barrels daily was expressed by the committee in its report. It was announced that an effort will be made to substantiate such a fact before the railroad commission in order that the state's allowable may be fixed at that quota, while their recommendations will be that the East Texas field be restricted to about 300,000 barrels daily with such a figure for the state in effect.

Pending legislation before the Texas law-making bodies providing for severe penalties for the violation of conservation laws and orders issued thereunder will be supported by the committee, according to the committee's report. It was predicted that the passage of such bills would greatly simplify and make easier the enforcement of proration.

Chas. F. Roeser, president of the Texas Oil & Gas Conservation Association, only organization that has diligently supported the commission in resisting scores of court attacks brought on by anti-prorationists, stated that the present crises confronting the oil business culminates a three-year fight. He added that the industry is now at the cross roads, and that all the past effort to stabilize production will have been lost unless the expanding activities of the individuals and companies evading proration are checkmated.

Approximately 50 company officials, invidual operators and organization officers participated in the Fort Worth conferences, which were open to the press. Although a specific committee was delegated by President Ames as representative of the American Petroleum Institute, all but three of the major purchasers of oil in the Mid-Continent and Southwest were on hand with one or more officials, who were in a position and did exercise their right to say yes or no when questioned as to present and future policies. Frankness displayed by all present served to establish a better understanding among the majors, who have been somewhat suspicious of the acts of their fellow companies of that class, and also between majors and independents.

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East Extension Likely For Torrance Field

Los Angeles.—Definite extension of the Torrance field to the east is indicated by showings in Pacific Oil Investment Company's Lupie 1, a semi-wildcat test near Wilmington. Good oil sand was cored between 3350 feet and 3570 feet, and a production test will be made around 3600 feet. The well is checking considerably higher on structure than other wells drilled as extension tests.

The Torrance field is a very flat structure which extends from near Hermosa Beach on the west to Wilmington on the east. It is the largest field in the Los Angeles basin, when considered on an acreage basis, but it is a low pressure area which has never proved very profitable for anybody. Edge wells have been producing a large percentage of water for years, but some of the inside leases have better records.

An extension toward the east could be an important development, but a large well is not expected. Two or three wells have been drilled east of the recognized producing limits, but only a small amount of oil has been found. It is not believed that a separate structure exists so near a flat field of this type.

String of 16-Inch Pipe Landed at 4840 Feet

Ventura, Calif.—Associated Oil Company successfully landed a string of 16-inch welded casing at 4840 feet in Lloyd 132, Ventura Avenue well, and set a record which will be difficult to break. Use of welded pipe at such a depth was one of the outstanding developments of the year. It required little more time to run the welded pipe than to run the conventional screw pipe ordinarily used. This record replaces the former record held by the company, a string of 16-inch casing having been successfully landed a short time ago in another Ventura Avenue well.

Associated Oil Company has been applying latest engineering practices at Ventura Avenue, and has succeeded in developing a number of new ideas. Special attention has been given straight hole drilling and use of casing testers for testing water shutoffs. Use of the acid bottle has been accompanied by refinements in reading bottle etchings which will ultimately be adopted by other fields.

The company holds the production depth record with Lloyd 83, a 5000-barrel producer which was completed at 9710 feet.

Drilling Revival for Midway-Sunset Starts

Taft, Calif.—Drilling of several wells in the Midway-Sunset district during the next few months may gradually lead to a mild revival of activity in an area which has suffered severely from a weak oil market. Two or three of the older operators are considering development of large leases which have not been intensely drilled. Work on these leases will be limited, but none the less important.

Honolulu Consolidated Oil Company recently completed a good well on Section 8-32-24, and will drill another well on the same section. This company has a large settled production in the district, but now finds itself in a position to drill a few wells at small cost. This will further insure the company of a steady future production of oil of a medium heavy grade.

Standard Oil Company and Union Oil Company are heavily interested in the Midway-Sunset district, but they have a much larger developed production than they are allowed under present curtailment provisions. These companies may do a limited amount of drilling on leases which are offset by smaller operators who may start line wells, but they will limit operations to necessary work.

The deeper producing zones offer a chance to complete larger wells than may be obtained in the old shallow zones. These lower sands were discovered after development of the upper sands, and the greater cost of completing wells will act as a throttle on operations.

Small Structures to Get Extension Tests

Taft, Calif. — Drilling in the semi-proven and wildcat districts near the McKittrick field will help to determine the value of several small structures which have not been tested decisively. Many surface "highs" have been mapped, and several have been drilled, but most of the tests were abandoned at depths too shallow to prove much. Both major and small operators have attempted to extend the field and open new producing areas, but the west side of the valley has not proved to be an unbroken field.

General Petroleum Corporation is considering a location on Section 10-30-21, a short distance northwest of the McKittrick field. The immediate area is known as the Sheep Springs anticline, and has been drilled on the northeast flank.

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North Dome Well After World's Drilling Depth

Coalinga, Calif. — North Kettleman Oil & Gas Company is drilling at 10,040 feet in Lillis-Welsh 1, extension wildcat on the North Dome at Kettleman Hills, and has succeeded in reaching the five-figure mark for the first time in the San Joaquin valley. The well is within striking distance of a world record, and the company plans to drill to 11,000 feet before considering abandonment. A production test was made at 9933 feet, but only a trace of oil was obtained.

This very interesting test was started last year with a minimum of excitement, and the location was obviously in a very doubtful area. The North Dome slopes gently toward the northwest, but geologists agree that production more than two miles from the Huffman area is somewhat doubtful. The Temblor was found as expected, and the well has never been regarded as entirely outside the promising class.

A record string of 7-inch casing was run and cemented in Lillis-Welsh 1. This casing was landed at 9640 feet, and was run quickly after the hole was reamed from eight and one-half inches to nine inches.

The present formation is believed to be the Kreyenhagen shale, but it is difficult to classify the shales around 10,000 feet at this point. Production around 11,000 feet would completely change the valuation of the Kettleman Hills field, and would mean the existence of a deeper producing zone around 10,000 feet on the North Dome.

Simpler production methods are beginning to replace the elaborate equipment which prevailed during the first development.

Standard Oil Company is drilling five wells on the North Dome, while Kettleman North Dome Association is drilling four. Union Oil Company, Superior Oil Company and Associated Oil Company are each drilling one well on the North Dome.

Third Ocean Test Is Holding Much Interest

Santa Barbara, Calif.—The third test off Coal Oil Point is attracting almost as much attention as either of the earlier tests, and this ocean wildcat should go a long way toward proving the value of the submerged structure. The first well was located about 1000 feet out in the ocean, but the latest location was made nearer shore. A short pier off the main pier was built to accommodate the new well. The latest geological report adds weight to the theory that the first wells were drilled on the ocean flank of the structure. Strong tar showings were encountered at 300 feet in the well now drilling around 500 feet.

The importance of a distance of 400 feet has been illustrated by the fact that such a space between the center of the Elwood field and the sides would have missed production entirely. The Coal Oil Point structure may be even smaller than Elwood. It is known that moving the location toward shore was a step toward reaching the top of the structure, but there has been no assurance that oil will be found in commercial quantities.

North Belridge Gets Only California Well

Los Angeles. — Only one well was completed in California during the past week, but several wells are nearing the completion point and should be tested within a short time. Redrilling and plugging back are occupying most attention in some of the older fields, and a majority of future completions will be workovers.

Company, Well and Location	Init. Prod. Bbls.	Depth
North Belridge—		
Ohio Oil Co., Bloemer 1, 36-27-20	1500	8525

*Failure. †Junked. ¶Million cu. ft. gas.

Seven Permits to Drill Issued in California

Los Angeles.—Permits issued to drill new wells in California districts continue to closely parallel the number issued at the same time last year. Seven new wells were started last week, as compared with three during the previous week. This brought the yearly total to 49, as compared with 51 at the same time last year. The new wells were widely scattered and no one field or district accounted for more than a single new location. Notices of intention to drill were:

Sierra Huntington Oil Company's No. 1, Section 10-6-11, at Huntington Beach.

Union Oil Company's King Vidor 1, Section 27-2-15, at Playa del Rey.

Smith and Richards' No. 1, Section 34-4-23, at Ventura Avenue.

Union Oil Company's Keene 1, Section 22-32-23, at Midway.

A. T. Jergins Trust's Nissen 1, Section 20-30-30, in Kern County.

Treasure Oil Company's Treasure 3, Section 23-29-27, at Fruitvale.

Caravel Petroleum Corporation's No. 1, Section 19-30-20, in Kern County.

Earthquake Reduces Output; Little Permanent Damage

Los Angeles.—The recent earthquake which centered near the Long Beach field shook surface equipment severely and was the direct cause of a much lower output in three or four fields in the Los Angeles basin. Underground damage was negligible, and casing strings regularly cemented in various fields came through in excellent condition. The first fear was for casing in the producing well, but a careful survey shows practically no damage below the surface.

More than 2000 oil wells are located in the area affected by the earthquake, but only two wells were severely damaged below the surface, as far as has been ascertained. Several derricks were shaken off their foundation, oil tanks were damaged, crown blocks were dislodged, pipe lines were broken, gasoline plants damaged, and most natural gas lines put out of commission by the shock March 10.

Most of the pumping wells south of the fault line in the Huntington Beach field were placed back on the pump to determine the underground damage to casing and moving parts in the well. Almost every well responded to the usual pumping action, and only one casing string was damaged. The surface equipment was damaged considerably, however, and engines, boilers, tanks and derrick connections were moved amid much confusion.

Pipe lines were damaged in several fields, and facilities for handling Long Beach, Dominguez, Seal Beach and Huntington Beach oil were seriously affected.

Standard Oil Company of California has shut in all wells in the Huntington Beach and Seal Beach fields. About 10,000 barrels have been shut in at Huntington Beach by this one company, and about 5000 barrels daily have been shut in at Seal Beach.

Standard Pipe Line Company has temporarily stopped purchasing oil at Long Beach, Huntington Beach and Seal Beach and has had some trouble in moving oil already in storage in and near these fields.

Union Oil Company's pipe line system in and near the Long Beach, Huntington Beach, Dominguez, Rosecrans and Seal Beach fields was damaged, and the company has stopped all purchases in these fields. The company has also shut in practically all producing wells in these fields until pipe line repairs are made.

A movement is under way to declare that an emergency exists in the Long Beach district, preparatory to shutting in the field for two weeks. The people at Long Beach are in a panicky state, and it is claimed that shutting down the field will have a beneficial effect upon the population. Several oil companies are fighting the action on the basis that the wells are not damaged.

Production at Long Beach has at least temporarily fallen below 50,000 barrels daily. This is the first time since 1923 that the daily output has dropped below 50,000 barrels. A complete shutdown could have been effected the morning after the earthquake, but it will be difficult to obtain such a suspension now.

Union Oil Company lost the use of three 80-000-barrel storage tanks near Norwalk as the result of the quake. The retaining walls functioned satisfactorily, and the crude oil was saved.

Standard Oil Company lost a 37,000-barrel storage tank at Huntington Beach when this unit of the storage

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battery collapsed. The contents were saved.

All natural gasoline plants at Long Beach have been shut down. Natural gas production will be down sharply during the week.

A survey of the dozens of large concrete storage tanks showed little damage. It has been pointed out that it may require several days to determine the damage to these concrete storage tanks, as the heavy oil would leak out very slowly.

Breaking of power and gas lines affected pumping wells as much as actual breakage of well equipment. So much attention has been given the cities that the fields have been content with whatever repairs the companies could make themselves.

A concerted effort is being made to shut in two or three Los Angeles basin fields. It must be said out of fairness that the need for a lower production is as much the cause for shut in agitation as is the earthquake.

No oil was destroyed by fire, but a small amount of gasoline burned. Four derricks burned in the Long Beach field when oil leaked from a tank and ran under a boiler. This was responsible for the rumor that the Long Beach field was in flames. The fire was quickly brought under control.

Refineries were sharply affected by the shock. Union Oil Company, Standard Oil Company, Associated Oil Company, Shell Oil Company and Richfield Oil Company practically shut down their refineries for a short time, but have partially resumed operations. Gasoline and oil tanks withstood the temblor with small losses, but the shutdown was largely a safety measure.

The earthquake, coupled with the banking holiday, practically paralyzed all business in Southern California. The oil industry suffered considerably from a much smaller consumption of all petroleum products, but the first part of the week saw a sharp increase in gasoline consumption.

The umpire announced that state production had dropped to around 435,000 barrels daily, most of the decline having been occasioned by the earthquake. Production at Long Beach quickly responded to the effects of the shock, while the Seal Beach field was still more proportionately affected.

It is believed that out of the sharp drop will come a lower state production. If the governor should order Long Beach shut in for two weeks, it is believed that crude oil prices would be raised to the former level. This would in turn give the operators confidence, and the field probably would stay within its allowable.

Converse Test Promises Production in Washita

Shreveport, La.—Indications that gas production and probably oil will be found in the Washita of the lower Cretaceous in the Converse field of Sabine Parish that now has two commercial wells in the shallow marl-chalk horizon, were given last week by Sandfield Oil & Gas Company's Bowman-Hicks 1, NE NE Section 26-9-13.

After logging sand and sandy shale from 3382-3403 feet in the Washita horizon the well blew out while operators were going in the hole with drill stem, making an estimated three to five million cubic feet of gas with a trace of oil. Some salt water accompanied the gas but the latter is believed to be coming from the Blossom which in all Sabine Parish fields carries a large quantity of salt water and had not been cased off. The temperature of the water in this well is 84 degrees. The gas is being killed and arrangements made to set six-inch casing on a shoulder at 3230 feet just above top of the lower Cretaceous which was definitely identified at 3246 feet; elevation is 302 feet.

On the shoulder at 3230 feet a drill stem test was made in the Woodbine which showed two thribbles of mud and oil with a show of gas. From there to 3280 feet were soft lime and shale showing gas. Structurally this well checked 227 feet higher than R. L. Gay, Trustee's Long Bell A-1, Section 10-8-13, which is the deepest hole in North Louisiana, being down to 7154 feet.

The Sandfield test is four miles east of J. J. Kean's Belton 1, Section 31-9-13, which showed for a commercial well in the upper-lower Cretaceous contact zone but was lost because of bad casing. The present test is the first well to go to the lower horizon since two shallow commercial wells were added in Converse. Present test is 4½ miles east and three fourths of a mile south of Gibson-Johnson & Higgins' Frost Lumber Company 1, Section 19-9-13, the discovery shallow well of this field and is one mile east and two miles south of the same operators Frost Lumber Company 2, Section 19-9-13, the other shallow producer.

The Washita horizon produces oil in the Pleasant Hill field in Sabine Parish and in the one producer in the Spring Ridge district of the same parish.

Bossier Parish

In Bossier Parish A. W. Phillips, Trustee's Ray Oden 1, NW NW Section 4-18-13, has a fishing job at 1680 feet.

In Caddo Parish, Caddo Prairie Development Company's Hawkins 1, SE SW Section 14-22-15, is testing the producing possibilities of the chalk at 1826 feet.

In Claiborne Parish, United Gas Public Service Company's Meadows 1, NE SE Section 13-21-5w, a 4500-foot test, is coring below 4300 feet, and the same company's M. E. Temple 1, Section 21-23-7w, is drilling below 3000 feet. It is also a 4500-foot test. Both are on 12,000-acre blocks.

Mrs. Aleene Ibach, Trustee's Rambin Estate 1, NW NE Section 32-11-11, a wildcat in DeSoto Parish, several miles north of Pleasant Hill, which had an oil show at 2792 feet and then bailed dry with a show of oil and gas and then had a gas blowout at 2964 feet after logging two feet of sand, bailed dry with a gas show at that level. Later in the week the test was being bailed at 3056 feet. Elevation is 216.5 feet. E. T. Oakes' Johnson 1, Section 30-13-15, is coring fossiliferous shale at 4623 feet in lower Cretaceous. Warren & Craig drilled plug and started to bail Wagner 1, Section 5-12-14, at 2820 feet, after 8¼-inch casing had been cemented at 2787 feet. Jack Whitson's Sanders 1, SW SW Section 19-11-13, has a fishing job at 2765 feet.

In Natchitoches Parish, Natchitoches Petroleum Company is coring below 3060 feet in Edenborn 1, SW NE Section 4-11-6w.

Puterbaugh et al's Pickering 1, SW SE Section 13-4n-12w, a Sabine Parish wildcat, temporarily shut down at 1150 feet.

In the Converse area of Sabine Parish R. T. Henderson's Sistrunk 1, SE NW Section 9-9-12, is being treated with acid at 2078 feet. H. C. Lessenger's Bowman-Hicks 1, NW SW Section 13-9-13, is drilling at 1350 feet. C. D. Loe, Trustee's Whitney Corporation 1, NW NE Section 12-9-14, reached base of the Annona chalk at 2101 feet and was drilling at 2103 feet. Joe Modisette's Frost Lumber Company 1, Section 20-9-13, has a fishing job at 1400 feet.

In Union Parish Paul G. Benedum's Mrs. J. L. Sterling 1, SE NE SW Section 29-21-2w, a 4500-foot test on a 10,000-acre block, is shut down at 1400 feet repairing rig.

In Webster Parish R. E. L. Silvey's R. F. Drake 1, NE NW Section 14-19-10, is shut down at 3125 feet.

Sabine Parish Leads New Louisiana Work

Shreveport, La.—Sabine Parish continues to lead the state in the number of permits to drill this year, five of the state's total of 11 this week having been granted for that parish.

In Bossier Parish, Puritan Oil Company of Shreveport was granted permit to drill W. P. Leonard 1, approximately 600 feet east and 300 feet north of the southwest corner of Section 19-19n-13w.

In De Soto Parish, Bailey Gaunce of Shreveport, was granted permit to drill Jenkins 1, 330 feet west and 350 feet

north of southeast corner of SE¼ of SW¼ of Section 35-13n-12w.

In Iberia Parish, Jefferson Lake Oil Company, New Orleans, was granted permit to drill Lake Peigneur 50, 175 feet north and northeast of Well No. 1 and 130 feet east of Well No. 48, of section.

In Plaquemines Parish, Texas Gulf Sulphur Company, Liberty, Texas, was granted permit to drill LaFourche Levee Board District No. 1, 595 feet south and 75 feet east of northwest corner of Section 12-18s-25e.

In Sabine Parish, C. B. Colby, Tr., Kilgore, Texas, was granted permit to drill J. H. Wedgeworth 1, 330 feet north and 330 feet east of southwest corner of NW¼ of NE¼ of Section 32-8n-10w. W. F. Lacy of Shreveport was granted permit to drill Cutrer 2, 400 feet north and 100 feet west of southeast corner of SW¼ of NE¼ of Section 13-7n-11w. C. H. Lyons of Shreveport was granted permit to drill Stille 1, 330 feet south and 330 feet west of northeast corner of NE¼ of SE¼ of Section 16-7n-11w. H. R. Smith et al of Shreveport, were granted permit to drill Middleton 1, 260 feet north and 330 feet west of southeast corner of Section 26-8n-12w. C. H. Tuttle of East Point was granted permit to drill C. B. Byrd 4, 800 feet south and 920 feet east of northwest corner of Section 7-7n-10w.

In St. Landry Parish, Gulf Refining Company of Louisiana, Houston, Texas, was granted permit to drill Wilson & Cochran 4, north 9° 10 feet east, 100 feet from lower inferior corner of west boundary of first or 274 feet southeast of No. 1 well, Section 4-6s-5e.

In Vermillion Parish, The Pure Oil Company, Houston, Texas, was granted permit to drill Milney Irrigation Company 3, 660 feet south and 2369 feet east of northwest corner of Section 34-11s-1w.

Magnolia Well Increase Boosts Zwolle Production

Shreveport, La.—Daily average oil production in the marl-chalk field in Zwolle, Sabine Parish, continued to mount again for the week ending March 15, after climbing into five figures for the first time for the week ending March 8. The daily yield for the week ending March 15 was 12,025 barrels as compared to 11,450 barrels for the preceding seven-day period.

The bulk of the increase was the mounting steadily from an initial yield of 540 barrels daily through a choke to 2115 barrels by Magnolia Petroleum Company's Ruth Gingratt 1, SE NW Section 30-8-11 in the newly opened part of the northeast field.

Zwolle Contributes Only North Louisiana Producer

Shreveport, La.—Eight completions in North Louisiana last week included a lone producer, a 140-barrel pumper in the Zwolle marl-chalk field of Sabine Parish, where there were also four dry holes.

A wildcat in Claiborne Parish, Webster Oil Company's W. J. L. Smith 1, located 200 feet south and east NWc SW NE Section 8-21-7w, was abandoned at 2114 feet.

In the Blanchard district of Caddo Parish, where there are several gas producers in the 2700-foot zone, Pyramid Oil Corporation abandoned F. C. Wheeler 2, located 660 feet south and east, NW NW Section 4-18-16, at 2754 feet.

In the Powhatan area of Natchitoches Parish, where one small gasser was completed at the shallow level of 500 feet and another test showed gas, De Soto Brothers Drilling Company, drilling the first of a series of several shallow tests for Gerson Oil Company on a 12,000-acre block, abandoned Smith 1, located 200 feet north and 1000 feet east NWc Section 10 but in

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Section 11-10-8w, as a dry hole at 552 feet.

Two new locations were made last week in Zwolle, D. M. Lide et al are rigging up for Steinhorst 1, located 330 feet south and west NEc Section 35-8-12, and C. H. Tuttle made location for Byrd 4, located 800 feet south and 920 feet east NWc Section 7-7-10.

Completions last week in North Louisiana follow:

Company, Well and Location	Init. Prod. Bbls.	Depth
Claiborne Parish—		
Webster Oil Co., W. J. L. Smith 1, 8-21-7w	*	2114
Caddo Parish (Blanchard)—		
Pyramid Oil Corp., F. C. Wheeler 2, 4-18-16	*	2754
Natchitoches Parish—		
DeSoto Bros. Drilling Co., Smith 1, 11-10-8w	*	552
Sabine Parish (Zwolle)—		
H. H. Alvord, Sabine State Bank 1, 28-8-11	*	2600
A. N. Landis, La. Long Leaf Lbr. Co. 1, 29-8-10	*	2642
V. R. Hammons et al, Travis 1, 13-7-11	*	2610
E. F. Neely, Ponder 1, 9-7-11	*	2710
Perkins & Bobbin, Hopkins 1, 11-7-11	140	2572

*Failure. †Junked. ¶Million cu. ft. gas.

Miller County Well Fails To Flow Satisfactorily

Texarkana, Ark.—With approximately 2000 feet of oil in the hole and the well having failed to flow satisfactorily through tubing, Magnolia Petroleum Company last week was swabbing E. V. Olivet 1, NW NE Section 4-16-26, Miller County, Arkansas, a southeast offset to the three recent producers in that area. Eight and one fourth inch casing was cemented at 2912 feet after the well showed three joints oil and mud in a 10-minute drill stem test from 2912-25 feet. The well had 1½ feet of sand and total depth is 2925 feet.

Arkansas wildcatting activity continued at a low ebb during the last week there being no new locations or completions.

In Lincoln County, Lawrence B. Cook, Trustee's McGehee Plantation 1, NE SW Section 5-8s-7w, drilling below 4180 feet.

In Miller County Bridwell et al's Barker 1, NW SE Section 31-17-26, is drilling below 1860 feet. Duluth-Arkansas Oil Company's H. Z. Price 1, NE NE Section 18-16-25, is arranging to test at 3030 feet in red beds.

In Union County, F. O. Henderson's J. F. Sample 1, NW NW Section 1-18-16, announced as a 5000-foot test, is a derrick. Tom Nash et al's Union Sawmill Company 1, NW NE Section 19-18-11, has spudded and cemented 10-inch surface casing at 306 feet.

Third South Mississippi Test May Go to 7500 Feet

Jackson, Miss.—Eastman, Gardiner & Company abandoned the second of a series of five tests to be drilled in south Mississippi, last week when J. H. Pickering 1, located 460 feet east and 220 feet north SWc NE NW Section 19-8n-15w, Covington County, was abandoned as a dry hole at 1685 feet. Elevation is 273 feet.

Meanwhile location is being made for the third test approximately three miles northeast of the abandoned hole, exact location not yet announced. This may be for the 7500-foot hole which is announced as one of the series. Owen & Modisette have the contract for the tests.

In George County, southeast Mississippi, Pelican Oil & Gasoline Company has spudded Luce Packing Company 1, 1320 feet north and east SEc Section 25-1s-6w, and cemented 16-inch surface casing at 206 feet. Operators are laying a gas line to United Gas Public Service Company's Jackson-Mobile trunk line five miles away for fuel. United's rig is being used on this test and this company has an interest in the test, it is reported.

Gulf Refining Company's Dantzler 2, SE NW Section 12-4s-11w, its third test in the Missisippi gulf coastal plain, spudded last week. This test is in Stone County, just north of the Jackson County line. It had previously been reported in Jackson County, as was Dantzler 1 drilled several weeks ago by the same company.

In Sunflower County in the delta section, Missisippi Oil & Gas Exploration Company's Dockery 1, SE SW Section 21-22n-4w, is drilling below 3800 feet in chalk of the upper Cretaceous probably Ripley which formation was logged about 3500 feet.

Alabama

Alabama wildcats were mostly unchanged in status last week from the preceding week. In Washington County, South Alabama Oil & Gas Company's St. Stephens A-1, Section 26-7n-1w, is reported preparing to test a gas show at 3500 feet.

Sulphur Water May Halt Extension Work at Hobbs

Hobbs, New Mexico.—Appearance of sulphur water in two offset wells trying for a north extension to the productive limits of the Hobbs field provides the biggest upset in the history of its development, and probably makes an abrupt termination of the only remaining opportunity for the field to continue the northwest trend.

Humble Oil & Refining Company's Hardin 1, SWc NW¼ Section 18-18s-38e, and one-half mile north of nearest production, swabbed sulphur water when unloaded and tested at 4248 feet. Playing a hunch that this water may be coming from top section of the lime pay zone, as is the case with most water wells on the west flank of the structure, the crew installed tubing with a packer set at 4145 feet in Hardin 1. The well again swabbed water, thus proving it to be from bottom of section. The hole has been plugged back to 4200 feet, and the next production test will be from only a small amount of lime pay.

Hardin 1 logged top brown lime at 2890 feet, and the top of the white lime at 4140 feet, with a surface elevation of 3677 feet. Although these markers indicated a steep dip in the structure to the northwest the appearance of water was unexpected.

Amerada Petroleum Corporation's Boon Hardin 3, a direct south offset to the above, likewise yielded water on preliminary test, although occupying a more favorable structural position. This well blew out while coring at 4134 feet, and made about 3500 barrels oil and gas estimated at 5,000,000 cubic feet in 12 hours. It was then shut in while the rotary crew prepared to lubricate off the production to run pipe. Flowing sulphur water appeared when the well was again opened to kill. The source of this water is problematical. The owners accepted the theory that the water migrated from the water well to the north through the very porous formation in the upper section of the pay, and cemented seven-inch pipe at 4134 feet in order to exclude same. Hardin 3 logged top white lime at 4116 feet, with a surface elevation of 3676 feet.

While these two north end wells are quite likely to be completed as commercial oil producers their water experience will naturally discourage operators from carrying out a proposed development program to the east and west as well as further to the north, except in meeting forced offsets.

The Texas Company's State 4-C, NWc NE Section 25-18s-37e, improved its oil and gas yield since the last report, and likewise shows less cut oil, which may be due to excessive volume of rotary drilling fluid pumped into the hole. It is the furtherest west producer in the Hobbs field. Based on a brief open flow gauge the well was rated at

9100 barrels fluid, 15 per cent b.s. and water, and 9,000,000 cubic feet gas daily, with a total depth of 4232 feet. Continental Oil Company's State 1-B, a west offset, had been delayed in completion by the loss of a bailer at 4028 feet, or two feet below the casing point.

Sun Oil Company's McKinley 3, NWc NE Section 5-19s-38e, scored a substantial increase in oil flow and decrease in sulphur water as result of having run a packer on tubing at 4030 feet. This well has been making water since last April, and for months has been pinched to 52 barrels daily in order to hold the volume of cut oil to five per cent. The water accompanying production in other nearby wells has been definitely proven to be coming in from the top section of the oil horizon, and success has been met with in attaining complete water shut offs by running packer on tubing. McKinley 3 increased its flow to 300 barrels daily, with about three per cent b.s and water after installing the packer.

Completions in the Hobbs field last week follows:

Company, Well and Location	Init. Prod. Bbls.	Depth
Hobbs Field—		
Stanolind O.&G. Co., W. S. Capps 8	1230	4195
The Texas Co., State 4-C	¶9-8000	4232

*Failure. †Junked. ¶Million cu. ft. gas.

Jackson Pool Outpost Well Supplying Needed Gas

Santa Fe, N. M.—Whether it proves to be a wildcat on an entirely new structure, or whether it is still a part of the Jackson area in Eddy County, the Leonard-Barnsdall Mary Dodd 1, SW Section 22-17-29, two miles south of the other wells in the Jackson pool, has proved itself as a much needed gas reserve for that area which has become seriously depleted. Crew has mudded the 6⅝-inch casing at 2307 feet and bradenheaded off 2,742,000 feet of gas to drill on deeper in the expectation of finding oil.

On the Pajarito Grant in Bernalillo County, Norrins Realty Company's No. 1 on NE Section 22-9n-2e, is changing over to rotary to drill deeper from 3640 feet. Location is made on NW NW Section 19-11n-4e, for Galegas Grant 1.

In Chaves County, Warman Oil Trust's Weldon & Hoar 1, SE Section 9-14s-25e, is waiting for fuel with hole bottomed at 585 feet. Landowners Oil Company is shut down at 5685 feet in State 1, NE 16-1s-27e, DeBaca County.

In Guadalupe County, Anton Chico Development Company's well, SW Section 20-9n-17e, has set the 10-inch casing at 1530 feet for a water shutoff. New Mexico Producing & Refining Company's McMullen 1, Section 24-5n-16e, is ready to resume at 4507 feet.

Rig is up for a test to be drilled in Rio Arriba County, Section 26-3s-1e, by Pan-States Oil Company.

California Corporation has material on the ground for No. 1 on Section 3-29n-11w. Fred Barrett interests are ready to spud Hart 1, Section 11-29-12; both of these tests are on structures in San Juan County.

In Valencia County, Western Natural Resources Corporation is underreaming to set 8¼-inch casing at 4240 feet. Location is on NE Section 5-6n-1e.

Worland, Wyo.—Foundation for the new refinery to be built here by the Bales Oil Trust is being laid, and tanks are being shipped in by Black, Sivalls & Bryson, Inc. Contract for five more wells to be drilled in the Hidden dome field for the Bales Company was let some weeks ago to D. L. McDonald. A syndicate of Miles City, Montana, men will drill a test in the field on a location offsetting the Bales producer.

Casper, Wyo.—About 15 carloads of crude oil per week are being shipped by the Stanolind Oil & Gas Company from here to the Utah Oil Refining Company's plant at Salt Lake City.

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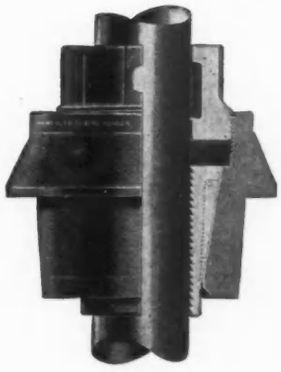

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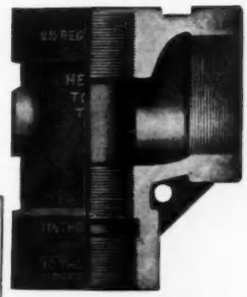

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Second Test for Gas Starts On Allen Lake Structure

Casper, Wyo.—Rig is up and ready to spud in the Ohio Oil Company's A. J. Hazlett 1, on the Allen Lake structure, SW Section 34-23-79, Carbon County, Wyoming. This is the company's second test on this structure, the first having been saved for gas and water to be used for future drilling. The program being carried out at Allen Lake is primarily for the purpose of developing a supply of natural gas to be used to augment that from the Dutton Creek field which is now supplying the requirements of the City of Laramie. The location of the new well is an offset to a well drilled some years ago by Cosden & Company, which was good for 30,000,000 feet of gas per day.

A new wildcat test is to be drilled this spring by Reeder Oil Company of Rock River, Wyoming, on the Overland or Pass Creek structure, in Carbon County. Contract is reported to have been let for drilling, but no exact location is given out for the test. However, the apex of the structure is on Section 19-20n-83w, on land belonging to the Union Pacific railroad. The structure was mapped by E. W. Krampert and A. F. Barrett, both formerly with Producers & Refiners Corporation.

The Riverside ranch wildcat test being drilled by S. Marvin James and associates of Denver, Riverside 1, SW SW Section 10-13n-76w, has set the 10-inch casing at 205 feet after having found a small showing of gas at 185 feet. Drilling ahead is in progress. The first test started by this company on the structure developed a good flow of pure water at 65 feet and was completed as a water well for the ranch. The rig was skidded and a new hole started with contract let for a depth of 2000 feet if necessary.

As soon as possible Yellowstone Oil Company will resume drilling Gabus 1, SW SW Section 14-38n-94w, on the Shoshoni struture northeast of the town of Shoshoni, in Fremont County. This well has been standing through the winter at 2210 feet, but when work resumes it will be with the idea of continuing to 6000 feet, if necessary, without further interruption.

T. R. Oberman's wildcat test on the Diamond ranch structure, in Platte County, NW SE Section 30-21n-68w, is last reported to be standing with cave at 375-379 feet cemented off. Drilling was to resume March 13.

Two Wildcats on Alberta Plains Report Progress

Calgary, Alta.—Report was received last week from two wildcat wells drilling on the Alberta plains. The Commonwealth Petroleum's test on LSD 9, Section 9-3-15, W4, Milk River structure, is reported to be coring ahead below the old bottom at 5240 feet. Joint test of Nordon Corporation and Cad A. Roney interests on the Twin River structure, has changed over from cable to rotary around 500 feet because of cavings. A combination rig is in use. Location is on LSD 11, Section 2-2-20, W4.

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Bad Roads Still Holding Up Montana Wildcat Work

Helena, Mont.—A new wildcat was to be spudded in on March 14 on a location southwest of the Border (Red Coulee) field and six miles north of the farthest well north in the Cut Bank field by P. T. Sweeney on the Korner property, NW NW Section 23-37-5w. Contract for drilling has been let to the C. & C. Operating Company. The location is on the northernmost nose of the Cut Bank structure, and will be watched with considerable interest by all operators in that district. Test is in Glacier County.

Good progress was reported from the two other Glacier County wildcat tests, both of which are on the Blackfeet Indian reservation, west of the Cut Bank field. The Santa Rita Oil & Gas Company's Blackfeet 1, SW NE Section 1-15-6w, is drilling below 1200 feet. W. M. Fulton's Haggerty 1, NE Section 16-34n-6w, set casing on top of the Colorado at 550 feet.

On Berthelote dome in Toole County, Liquid Gold Oil Company's Roberts 1, NW NE Section 25-36-1e, has failed to get a water shutoff at 2644 feet although four cementing jobs have been attempted. The test has been drilled 30 feet deeper where an oil sand is reported. Until the water shutoff is accomplished, however, no gauge can be made of the production. This test is now deeper than any other to be drilled on this structure.

No word of operations having been resumed at the wildcat well on Devil's Hole structure has been received. This is the Rice-Fulton Development Company's No. 1 on SE Section 20-2n-23e. which is held up at 2350 feet by the bad condition of the highways. The test is in Yellowstone County.

It is understood that Montana Gas & Petroleum Company is also held up by bad roads which prevent moving supplies to the location on the Three Forks structure. Well is bottomed at 1736 feet.

Special Core Drill Outfit Ready for Midway Dome

Casper, Wyo.—Mutual Oil Syndicate announced this week that it had moved in the new and specially devised rotary core drilling outfit with which it plans to drill several tests on Midway dome, 12 miles north of Casper, data from which will determine the location of the company's next deep test. The new outfit is portable, and was designed by Sidney H. Keoughan, president of the syndicate.

Blanco County Test to Influence Colorado Future

Denver, Colo.—Most interesting and important, perhaps, of all of the wells drilling at this moment in Colorado is the deep test of The California Company in the old Rangely shallow field in Rio Blanco County, NW SE Section 30-2n-102w, which has been drilled to 7169 feet (probably the basal Weber) and which is now being plugged back to test showings which were encountered in the upper Weber (Tensleep in Wyoming). At 6228 feet this well was tested for gas and oil showings, but no reports of the gauge were made by the company. One observer said the well flowed over the top, but this was not confirmed by company officials. The well is the deepest ever drilled in the general district, and future explorations in western Colorado and eastern Utah will depend largely upon the outcome of the test.

Weld County Operations Still Being Delayed

Denver, Colo.—Delays continue to hold up the progress of Continental Oil Company's Anthes 1, NE NE Section 24-8n-59w, on the Buckingham-New Raymer structure, Weld County, eastern Colorado. The test drilled out the cement at 3563 feet, but again found it necessary to recement. Hole is standing now, waiting for the cement to set before drilling deeper. In the Greasewood field, Manning & Terry will abandon Niles 1, NE SE Section 13-6n-61w, after having made a test of the Muddy sand at 6650 feet. Original total depth was 6721 feet, but no showings of interest were found. This test was reported as an abandonment some weeks ago, after which the company decided to make another test of possible production.

The test on Fish Creek structure being drilled by Mid-Colorado Petroleum Company, Omholt 1, SE Section 29-4-87, in Williams Park district, Routt County, is to resume operations April 15. The test has been standing bottomed at 2200 feet, waiting for casing. At 1917 feet is reported around a million feet of gas and upon being drilled deeper to the present bottom reported an increase to about four million feet.

On Dry Mesa structure, LaPlata County, Phipps et al's test, SW SW Section 9-33-13w, reported an oil showing at 700 feet and is now moving in casing for a shutoff. Showings at the present depth has been encountered in other wells drilled in this district.

In the Florence district, Fremont County, Cherry Creek Placer Company's Lucas 1, SW SW NE Section 32-18s-69w, is drilling in lime below 1225 feet.

Northwest of the Berthoud field in Larimer County, the test, Kistler 1, Section 2-4n-70, being drilled by Art Deininger and associates, has been spudded 280 feet deep and shut down.

South Park Oil & Gas Company is preparing to resume work at Esche 1, NW Section 5-9s-76, Muleshoe structure. The well has been standing shut down at 2465 feet. It will be necessary to fish for casing spear in the hole, and then run the 6¼-inch for water shutoff.

More Blackfeet Tribal Land Opened in Cut Bank Area

Cut Bank, Mont.—At Browning on March 20 there will be another auction of oil and gas leases of the Blackfeet Indian tribal lands. The block offered will consist of 2127 acres. Bidders must offer bonus on an acreage basis in addition to the advance royalty or rentals required. This will be the second such auction to be held in recent months, the first having resulted in the purcrase of leases by Santa Rita Oil & Gas Company on which one test has already been started. The lands lie

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west of the Cut Bank oil and gas field and are believed to have good possibilities for oil production.

There were seven new wells which had been drilled in and either had been put on the pump or were being got ready for production. One new well started drilling in the proved field. The Adams-Mannix Britton 1, SE SE NE Section 14-34-6w, pumped 47 barrels initial from a total depth of 2890 feet. Santa Rita Oil & Gas Company's joint test with the E. J. Lessor interests, a northwest extension to the proved sector, made 50 to 60 barrels before it was shot. It is now cleaning out at 2914 feet.

On the Mattson property Alberta-Pacific Consolidated's No. 1, SE NW Section 14-34-6w, swabbed 90 barrels initial with total depth 2910 feet.

Smallest producer yet completed in the "north area" of the field is Roy Tarrant's McClellan 1, SE SW Section 7-34-6w, which is good for a half million cubic feet of gas at 2720 feet. Some observers believe it would be improved by shooting.

After a second shot, Dakota-Montana Oil Company's Drumheller 1, SW SE NE Section 3-34-6w, was swabbing 75 barrels per day at 2965 feet.

The two other wells which were rigging up pump were Roy Tarrant's Britton 1, NE NE SE Section 14-34-6w, which was drilled in some weeks ago and L. R. Hannah, Agent's, Britton 1, SW SE Section 14-34-6w, bottomed at 2897 feet.

The new well which got under way is another on the Britton farm, Hannah-Porter Oil Company No. 1, NE Section 14-34-6w; it is drilling below 500 feet.

Midland County Gets Most Of Michigan Drill Permits

Mt. Pleasant, Mich.—Of 11 new drilling permits issued this week in Michigan seven are for Porter township, Midland County, where a brisk drilling play has started as a result of a 3200-barrel strike on Michigan Pacific & Teater's Otway 2, Section 22.

Permits for drilling locations in Porter township follow:

C. W. Teater's Otway 1, NE NE SW; Otway 2, NW NE SW; Otway 3, SW NE SW; (all in Section 22).

Pure Oil Company's Mates 2, NW NW SE; Mates 3, NW SW SE; (both in Section 22).

Smith Petroleum Corporation's Busharee 1, Section 22, SW SW NE; Sun Oil Company's Miller 1, Section 16, SE SE SW.

Other new locations are: Flannigan & Voorhies' Mitchell 1, Oceana County, NE SE SE Section 36, Hart township; Alvin Webber's Bohlinger 1, Ogemaw County, SW SW NE Section 26, West Branch township; Pure Oil Company's Mills Estate 1, Ogemaw County, SE NW SE Section 36, Mills township; Pure Oil Company's Harrison 3, Midland County NE NE SW Section 18, Greendale township.

Dundee Lime Test Is Disappointment

Mt. Pleasant, Mich.—Drilling into water in Dundee limestone on Pure Oil Company's Yost A2, Midland County, SW SW NW Section 35, Greendale township, a direct north offset to a producing Dundee well with an 1150-barrel initial, indicates a spotty producing horizon in the area south of the main producing district of Central Michigan, where high hopes for new production have been centered in past weeks.

Yost A2 was drilled to 3450 feet and made both gas and oil in small quantities. The well is making considerable water. It will be plugged back.

Pure Oil Company completed the first test on the Yost lease in December, 1932, as a wildcat four miles south of Chippewa-Greendale pool. It had an initial of 1150 barrels. The second well on the lease (B1, direct west location) had an initial of 210 barrels.

B2 (north a location from the B1) had an initial of 70 barrels and showed water. It was plugged back and treated with acid, making 200 barrels.

Three tests under way will define in a large extent what commercial possibilities the district surrounding the Yost lease holds. Pure Oil Company is drilling the Clark Heirs 1, Jasper township, Section 2, a mile southeast of Yost; Columbia Oil & Gas Company is drilling the Travis 1, Section 32, Greendale township, two miles west; and Pure Oil Company is drilling the Corning 1, Section 34, Greendale township, a half mile north.

Two good commercial wells were completed by Pure Oil Company in Midland County, Section 7, Greendale township, in proven territory. Novack A1, NE NE SE, was completed for 300 barrels from 3561 feet and Reem C5 for 350 barrels from 3562 feet.

Columbia Oil & Gas Company's Cornell 1, Midland County, NE SE SW Section 15, Greendale township, failed to show production in the Dundee, total depth 3673 feet, and probably will be abandoned without further testing. The test is located on the southern border of Chippewa-Greendale field.

Two tests that were completed recently for light wells were boosted this week by treating with acid. Whittmer Oil Company's Cashen 2, Denver township, Section 30, Isabella County, was increased from 30 to 75 barrels a day and Talbot Oil Company's State B4, Midland County, Greendale township, Section 11, was increased from 30 to 90 barrels a day.

Completions follow:

Company, Well and Location	Init. Prod. Bbls.	Depth
Midland County—		
Pure Oil Co., Novack A1, Greendale Twp., ne ne se, Sec. 7	300	3561
Pure Oil Co., Reem C5, Greendale Twp., ne nw se, Sec. 7	350	3562
Isabella County—		
Old Dutch Oil & Gas Co., McGuire 1, Vernon Twp., Sec. 35	¶1½	1305

*Failure. †Junked. ¶Million cu. ft. gas.

Several New Tests Are Planned in Michigan

Mt. Pleasant, Mich.—Further test drilling is either under way or being planned for three different wildcat areas of Michigan where previous testing has shown production or revealed structure.

In Oceana County Flannigan and Voorhies have made a location in NE SE SE Section 36, Hart township, on the Mitchell 1. In Elbridge township, Section 31, Edward DuVall's Werick 1, produced from 75 to 110 barrels a day when completed in 1932 in the Traverse at 2100 feet, but it has been shut in as result of litigation. It was produced only for two or three days.

Further testing following the discovery strike failed to show other production either in the Traverse or Dundee.

Two tests have been started in Ogemaw County where a Dundee structure was worked out by testing some time ago. Pure Oil Company has made a location for Mills Estate 1, Mills township, SE NW SE, Section 36; Alvin Webber has made a location on the Bohlinger 1, SW SW NE Section 26, West Branch township.

In townships north of the old Muskegon field in Muskegon County plans are for testing. Five tests have worked out a Red Rock structure. Development probably will center in Dalton township, directly north of the old field.

In Midland County Columbia Oil & Gas Company is reaming at 1390 feet to set six-inch casing in Travis 1, Greendale township, Section 32. L. G. Thompson's Ryal 1, Section 3, Mt. Haley township, is drilling at 1450 feet.

James Taggart's Barton 1, Mecosta County, Austin township, Section 11, is drilling at 1100 feet.

Pure Oil Company's Vertengruber 1, Tuscola County, Section 27, Vassar township, is drilling at 2100 feet, and failed to show either gas or oil in the Bera sand. It will be deepened to the Dundee.

In Clare County, Ira Scheifley's Fox Farm Syndicate 1, Section 21, Summerfield township, is shut down at 1750 feet.

35 Wells Completed in Eastern States Fields

Cleveland, Ohio.—Fields of the Eastern States accounted for 35 completions during the week. Of these 17 were oil wells having an aggregate initial production of 171 barrels.

Pennsylvania led in field results, being credited with 19 completions, 10 producing oil wells, six gas wells and three dry holes.

The completions follow:

Pennsylvania

Company, Well and Location	Init. Prod. Bbls.	Depth
Bradford Field—		
South Penn Oil Co., Farm 4202 tr. 4	3	....
South Penn Oil Co., Bingham 405 tr. 4 wells	Pres.	....
Olean Petroleum Co., Fee 21	12	....
Sloan & Zook Producing 1.	11	....
Minard Run Oil Co., Morris 35	Pres.	....
Forest Oil Corp., Fee 141..	Pres.	....
Looker & Co., Looker 1....	¶	....
Bradford Producing Co., Fee 30	Pres.	....
Bradford Producing Co., Fee 31	4	....
Towne-Melvin Oil Co., Smedley 5	7	....
T. P. Thompson, Jr., Fee 28	3	....
Center-Middle Field—		
Warner Estate, Werthman 1	5	....
Butler County—		
J. C. Trees, Mars National Bank land 1	10	....
C. R. Conabee & Co., Cashdollar 1	¶	....
Clarion-Venango County—		
Switzer Bros., Switzer 1....	2	....
Surety Oil Co., Staub 26....	2	....
Fryburg Motor Co., Sporer 6	¶	....
Shorts Oil & Gas Co., Danforth 3	¶	....
New York-Penn Gas Field—		
S. Sovacol, Fee 1	¶	....
Penn-York Co., Preston 1...	*	....
Mutual Natural Gas Co., Murry 1	¶	....
Pennsylvania Natural Gas Co., Ford 1	*	....
Watkins Salt Co., Wentz 1.	*	....
New York		
Allegany County—		
Ryder-Scott Co., Scott 9....	3	....
Warters, John D. MacDonald & Co. 1	2	....
West Virginia		
Calhoun County—		
Creed Barker & Co., Johnson 2	¶	....
Cabell County—		
Mid City Gas Co., Ritter 1..	¶	....
North Pole Ice Co., Fee 1..	¶	....
Marion County—		
Clifton Oil Co., Campbell Hrs. 1	¶	....
Ritchie County—		
Coyle Farm Oil & Gas Co., Coyle 1	¶	....
Central Ohio		
Belmont County—		
Ohio Fuel Gas Co., Daugherty 1	*	1838
Coshocton County—		
Murphy & Co., Littlem 2....	75	3054
Fairfield County—		
City Natural Gas Works, Hummell 1	¶	....
Meigs County—		
Ohio Fuel Gas Co., Van-Cooney 1	¶	....
Medina County—		
Curtis & Eaken, Broadsword 7	15	376
Curtis & Eaken, Brown 7..	*	....
Edson Sons Co., Wertz 26..	1	375
Northwestern Ohio		
Mercer County—		
Henry Langenkamp, Fee 3..	1	....
Indiana		
Vanderburg County—		
Jess Young, Kruger 2.....	15	....

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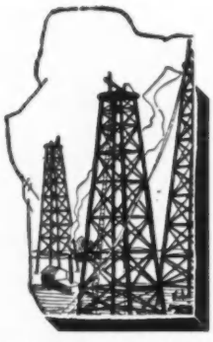

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Engineering-Equipment Show at Houston in May

The Oil Equipment & Engineering Exposition previously scheduled to be held in Dallas this spring announces a change in location and date, and will be held in Houston May 22-28. The site of the exposition, which opens Monday noon, May 22, and runs through the following Sunday, is Convention Hall, five blocks from Houston's business and hotel center. Convention Hall comprises approximately 60,000 square feet of concrete floor space, with sufficient adjacent outside space for open air exhibits and parking space.

The change in location has been made in order to more fully cooperate with and meet the desires of both oil men and the manufacturers of oil industry equipment, since the concentrated activity in the Gulf Coast territory had indicated that this area is now and probably will be the center of greatest activity for the next few years. The methods of operation employed and the adaptation of equipment in the deep drilling of the Gulf Coast fields has centered the attention of the entire industry in this area and has made it the most logical position for the Exposition. Recent new discoveries in the salt dome territory, added to the already approximately 150 proven and prospective fields, have drawn many operators from other sections.

Representatives of oil companies from not only all portions of the United States but from various foreign countries throughout the world where oil is produced and refined are expected to be in attendance. These men are particularly interested in the methods of operation and the kinds of equipment used in the Gulf Coast area and will welcome the opportunity of visiting the nearby fields while in attendance at the Exposition.

Aside from the many displays of tools, machinery and materials there will be exhibits of a technical nature. One of these that is looked forward to with interest is that of the United States Bureau of Mines, which will show samples of crude oil from all countries and will demonstrate the latest practices used in gas lift operations. The extensive work on the study of the migration of oil by the Burea has made available some valuable data that will be presented for the use of the industry. Motion pictures relative to the development of the petroleum industry and emphasizing especially the predominance of the United States will also be shown.

Complimentory tickets can be secured by addressing the Oil Equipment & Engineering Exposition, 2519 Gulf Building, Houston, or will be available through manufacturers and distributors exhibiting at the exposition.

Squeaks *from the* BULL WHEEL

Technical Description of Maritime Drilling Problems

When the Gulf Coast issue of The Oil Weekly was under first consideration in the editorial department staff meeting several months ago the question of maritime or swamp land drilling was discussed. An extremely technical member of the staff, who claims to be an engineer, a chemist, and what have you, who has drunk coffee from one end of Louisiana's swamp to the other, opined that he could handle it.

"But, George," the editor objected, "You'd make it too darned technical for anybody to understand."

"Just let me show you how I can write a non-technical, technical article," he pleaded.

Here it is—ideally designed for Squeaks of the Bull Wheel:

In the early Gulf Coast days (and it don't make no difference how early) offshore, or out-from-the-bank drillin' got its start because of oil sands extending out into the lake, marsh, swamp, or other body of water adjacent to the oil field, and aggressive drillers spurred on by more aggressive drilling superintendents, not to mention all breeds of executives, proceeded forthwith to get out into water often over belly-deep and drilled like hell. Bayou, shallow bay, mud-swamps or marsh, just so there was water over where the oil sand should be, these birds went into the slime and drilled—so these early (and we repeat, how early, is nobody's business) wells were undeniably classified as extension wells.

During this same early (very early, maybe) period, the equipment used was largely (well, pretty large, anyhow) a makeshift of what stuff was at hand—and this mostly because no sensible drilling crew would float, drag, or hoist anything of real value out into anybody's swamp. Then again, purchasing agents were having difficulty in

1—Buying things that were new, yet still easy to float, drag or hoist,

2—They didn't want to invest the company's money in new stuff that had to be exposed to swamps infested with malicious mosquitoes, awful alligators, snooping snakes, niggardly niggers—and further, which may or may not have a bottom. Who can blame 'em. So the equipment was junk, in the early days (early enough, so quit asking).

Concurrent, or alongside of and accompanying the recognition of geophysical instruments (advanced, highly perfected and truly scientific wiggle-sticks in which our forefathers had not believed and wouldn't believe it now) indications or interpretations of which seemed to show a marked (streaked, warp and woof) preference in many instances for acreage deluged with water (the slimier and the muddier, the better) marsh grass (snake hay in La.) or other nuisances (snakes, turtles, alligators, gars, etc.) special types of equipment for drilling off-the-shore were developed.

Ah! the ingenuity of the drilling supt. and the purch. agt. This condition occurred not so early as the first condition—or a little later. As you like.

The wide difference in the degree of accessibility of the places located for the bore-hole, as our English friends say, called, yea, even yelled, for widely different types of equipment. This is not unlike the differences existing between Kettleman Hills and Yates, excepting off-shore drilling in the La. Gf. Cst. is still more differenter.

With the solution of many (and more than you think) of these problems, wildcatting and the resultant production, much to the surprise of a lot of hopeful bore-holers (drillers in the U. S.) which was inadvertantly developed in a lot of lakes, rivers, bayous, swamps and marshes, has increased. Truly it has. See anybody's statistics. This created concurrently and subsequently a branch of the producing branch of the industry which is strikingly, but not violently, individualistic. (There is much more swearing in these regions because of both the flora and the fauna than in many other districts, and it is both individualistic and collective).

While Lost Lake, Goose Creek, and no doubt several other low places (altitude only, considered) have witnessed a small amount (which is somewhat less than a large amount) of off-the-bank or shore drilling, Coastal Louisiana has messed around and developed a hell of a lot of the technique and equipment for this dam(p) class of operation. Parenthetically, let it be said that California off-the-seacoast drilling, like practically everything else in that country, has to be placed under another classification for the very good and indisputable reason that the water (Pacific Ocean, to those geographically inclined) is one devil of a lot deeper—and it gets deeper faster.

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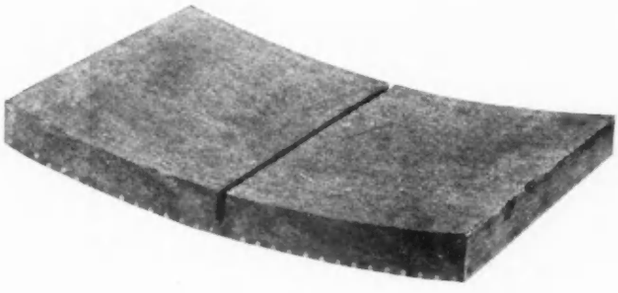

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